UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

FORM 10-K

(Mark One)

☒ **ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the fiscal year ended: December 31, 2017

or

☐ **TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the transition period from _____ to _____

Commission file number: 001-36310

CONCERT PHARMACEUTICALS, INC.

(Exact name of registrant as specified in its charter)

Delaware	**20-4839882**
(State or other jurisdiction of incorporation or organization)	**(I.R.S. Employer Identification No.)**

99 Hayden Avenue, Suite 500
Lexington, Massachusetts 02421
(Address of principal executive offices) (Zip Code)

Registrant's telephone number, including area code: (781) 860-0045

Securities registered pursuant to Section 12(b) of the Act:

Title of each class	**Name of each exchange on which registered**
Common Stock, par value $0.001 per share	**The NASDAQ Global Market**

Securities registered pursuant to Section 12(g) of the Act:

None

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes ☐ No ☒

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act. Yes ☐ No ☒

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes ☒ No ☐

Indicate by check mark whether the registrant has submitted electronically and posted on its corporate Web site, if any, every Interactive Data File required to be submitted and posted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit and post such files). Yes ☒ No ☐

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K (§229.405) is not contained herein, and will not be contained, to the best of registrant's knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K. ☐

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company or an emerging growth company. See the definitions of "large accelerated filer", "accelerated filer", "smaller reporting company" and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer	☐	Accelerated filer	☒
Non-accelerated filer	☐ (Do not check if a smaller reporting company)	Smaller reporting company	☐
Emerging Growth Company	☒		

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act. ☒

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act). Yes ☐ No ☒

The aggregate market value of the voting and non-voting common equity held by non-affiliates of the registrant as of June 30, 2017 was approximately $192,928,000 based on the closing price of the registrant's common stock on the NASDAQ Global Market on that date.

The number of shares outstanding of the registrant's Common Stock as of February 26, 2018: 23,233,275

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References to Concert

Throughout this Annual Report on Form 10-K, the "Company," "Concert," "we," "us," and "our," except where the context requires otherwise, refer to Concert Pharmaceuticals, Inc. and its consolidated subsidiary, and "our board of directors" refers to the board of directors of Concert Pharmaceuticals, Inc.

Forward-Looking Information

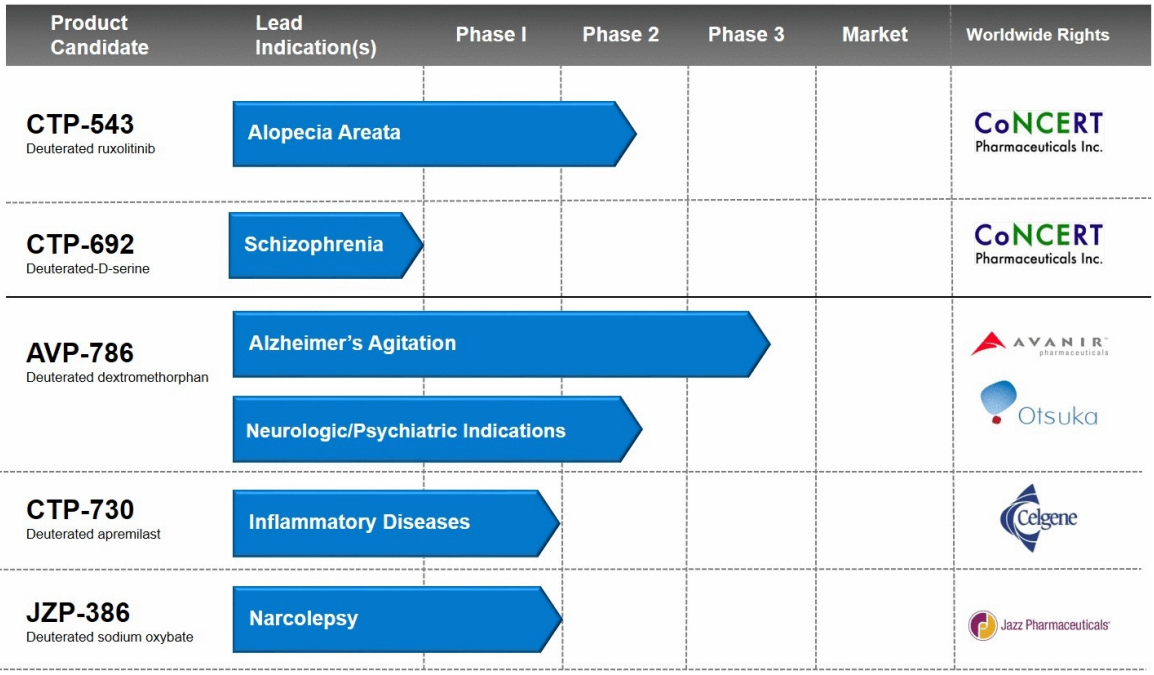
This Annual Report on Form 10-K contains forward-looking statements regarding, among other things, our future discovery and development efforts, our future operating results and financial position, our business strategy, and other objectives for our operations. The words "anticipate," "believe," "estimate," "expect," "intend," "may," "plan," "predict," "project," "would" and similar expressions are intended to identify forward-looking statements, although not all forward-looking statements contain these identifying words. You also can identify forward-looking statements by the fact that they do not relate strictly to historical or current facts. There are a number of important risks and uncertainties that could cause our actual results to differ materially from those indicated by forward-looking statements. These risks and uncertainties include those inherent in pharmaceutical research and development, such as adverse results in our drug discovery and clinical development activities, decisions made by the U.S. Food and Drug Administration and other regulatory authorities with respect to the development and commercialization of our drug candidates, our ability to obtain, maintain and enforce intellectual property rights for our drug candidates, our ability to obtain any necessary financing to conduct our planned activities and other risk factors. We may not actually achieve the plans, intentions or expectations disclosed in our forward-looking statements, and you should not place undue reliance on our forward-looking statements. Actual results or events could differ materially from the plans, intentions and expectations disclosed in the forward-looking statements we make. We have included important factors in the cautionary statements included in this Annual Report on Form 10-K, particularly in the section entitled "Risk Factors" in Part I that could cause actual results or events to differ materially from the forward-looking statements that we make. Our forward-looking statements do not reflect the potential impact of any future acquisitions, mergers, dispositions, joint ventures or investments that we may make. Unless required by law, we do not undertake any obligation to publicly update any forward-looking statements.

Part I

Item 1. Business

OVERVIEW

We are a clinical stage biopharmaceutical company applying our extensive knowledge of deuterium chemistry to discover and develop novel small molecule drugs. Selective incorporation of deuterium into known molecules has the potential, on a case-by-case basis, to provide better pharmacokinetic or metabolic properties, thereby enhancing their clinical safety, tolerability or efficacy. Our approach typically starts with previously studied compounds, including approved drugs, which we believe may be improved with deuterium substitution. Our technology provides the opportunity to develop products that may compete with the non-deuterated drug in existing markets or to leverage its known activity to expand into new indications. Our deuterated chemical entity platform, or DCE Platform®, has broad potential across numerous therapeutic areas. We have a pipeline of clinical candidates as well as research efforts to identify new product candidates.



OUR STRATEGY

Our strategy is to apply our deuterium technology to previously studied molecules, including approved drugs, in which deuterium substitution has the potential to enhance clinical safety, tolerability, or efficacy. We select pipeline candidates based on the medical needs of patients, commercial opportunity, regulatory considerations, and competitive landscape.

Key elements of our strategy include:

- using deuterium technology to develop deuterated product candidates with potentially improved safety, tolerability or efficacy profiles for new indications that we believe are promising in view of the known biology of the approved drug;
- developing our deuterated product candidates quickly through proof-of-concept clinical trials, which could be as early as Phase 1, and then determining whether to advance it independently or with a partner; and
- commercializing product candidates on our own, or with a strategic partner.

DEUTERIUM

Due to its natural abundance, the average adult human body contains approximately two grams of deuterium. While essentially identical to hydrogen in size and shape, deuterium differs from hydrogen in that it contains an additional neutron. As a result, deuterium forms a more stable chemical bond with carbon than does hydrogen. The deuterium-carbon bond is typically six to nine times more stable than the hydrogen-carbon bond. This has important implications for drug development because drug metabolism often involves the breaking of hydrogen-carbon bonds.

Because deuterium forms more stable bonds with carbon, deuterium substitution can in some cases alter drug metabolism, including through improved metabolic stability, reduced formation of toxic metabolites, increased formation of desired active metabolites, or a combination of these effects. At the same time, these improvements in drug metabolism are possible without materially altering the intrinsic biological activity of a compound. Deuterated compounds with enhanced metabolic properties can generally be expected to retain biochemical potency and selectivity similar to their hydrogen analogs. The effects, if any, of deuterium substitution on metabolic properties are highly dependent on the specific molecular positions at which deuterium is substituted for hydrogen. In addition, the metabolic effects of deuterium substitution, if any, are unpredictable, even in compounds that have similar chemical structures.

Potential advantages of product candidates based on our DCE Platform

Using our DCE Platform, we create novel drugs designed to have superior properties - including enhanced clinical safety, tolerability or efficacy - based on compounds that have established pharmacological activity. In many instances, Phase 1 clinical evaluation has the potential to demonstrate whether there will be product differentiation.
Potential advantages of our DCE Platform include the following:

- *Improved metabolic profile.* An improved metabolic profile may potentially reduce or eliminate unwanted side effects or undesirable drug interactions or increase efficacy. Metabolic profile refers to the relative amounts and exposure profile of the parent drug and its metabolites in the body.

- *Increased half-life.* A longer half-life may decrease the number of doses that a patient is required to take per day or provide more consistent exposure of the compound in comparison to the corresponding non-deuterated compound, potentially improving the drug's therapeutic profile. Half-life is usually defined as the time it takes for the body to clear half of a given concentration of the drug from the plasma.

- *Avoidance of undesirable metabolism:* By avoiding first pass metabolism, we may be able to improve oral bioavailability, which could potentially lead to better efficacy at a lower dose of drug. First pass metabolism is metabolism that occurs before the drug reaches the circulatory system.

OUR PRODUCT CANDIDATES

Our pipeline is focused on leveraging our deuterium expertise and proprietary product platform to develop novel medications designed to enhance patient outcomes in diverse therapeutic areas including autoimmune and inflammatory diseases and central nervous systems (CNS) disorders. The discussion below highlights our most advanced development programs including those being developed by our collaborators.

CTP-543

Background on Alopecia Areata

Alopecia areata is a chronic autoimmune disease affecting approximately 650,000 Americans at any given time and that results in partial or complete loss of hair on the scalp and/or body. Alopecia areata occurs when the immune system attacks the hair follicles and is characterized as non-scarring hair loss. It presents in a number of patterns including:

- Patchy: coin-sized or larger patch or patches of hair loss;

- Totalis: no hair on the head; and

- Universalis: no hair anywhere on the body.

Onset can occur at any age including childhood, and it affects both women and men equally. While the average age of onset is between 25-35 years, the disease does occur in children, and onset in the first two decades is associated with more severe disease. The emotional effect of alopecia areata can be considerable and may result in anxiety and depression or affect personal attributes like self-esteem and confidence. Alopecia areata may also be associated with other autoimmune conditions such as thyroid disease, vitiligo, allergic rhinitis, asthma, lupus, rheumatoid arthritis, and ulcerative colitis. The most common form of treatment is corticosteroids including intralesional injections or topical application. However they often are not an effective treatment option. There are currently no FDA-approved treatments for alopecia areata.

CTP-543 Opportunity

CTP-543 was discovered by applying Concert's deuterium chemistry technology to modify ruxolitinib, a Janus kinase ("JAK") inhibitor, which is commercially available under the name Jakafi® in the United States for the treatment of certain blood disorders. Ruxolitinib has been used to treat alopecia areata in academic settings, including an investigator-sponsored clinical trial, and has been shown to promote hair growth in individuals with moderate-to-severe disease. In an open-label clinical trial of 12 patients with moderate to severe alopecia areata investigators at Columbia University demonstrated that 20 mg of ruxolitinib administered orally twice daily resulted in 9 of 12 patients achieving at least 50% regrowth by the end of the treatment period. Responders averaged 92% regrowth by the end of the treatment period.

In January 2018, we announced that the FDA had granted Fast Track designation to CTP-543 for the treatment of alopecia areata.

Clinical Development of CTP-543

In 2016, we completed single and multiple ascending dose Phase 1 trials with CTP-543 which enrolled a total of 77 healthy volunteers. The pharmacokinetic measurements showed increased exposure with increasing doses of CTP-543. CTP-543 was well-tolerated across all dose groups and there were no serious adverse events reported in subjects who received CTP-543. In the multiple ascending dose Phase 1 trial of CTP-543, pharmacodynamic analyses were performed to assess the inhibition of IL-6- and IFN-gamma-mediated JAK/STAT signaling. Consistent with the established pharmacological activity of CTP-543, a dose-related reduction in IL-6-stimulated phosphorylated STAT3 was observed. Also, IFN-gamma-mediated STAT1 signaling, which is believed to play a key role in the pathogenesis of alopecia areata, was significantly inhibited in disease-relevant immune cell types at all doses evaluated.

We also conducted a Phase 1 crossover study evaluating the metabolite profiles of CTP-543 and ruxolitinib. In this study, except for the presence of deuterium, no new metabolites were observed with CTP-543.

A Phase 2a trial to evaluate two sequential doses of CTP-543 (4 and 8 mg twice daily) and a placebo control is ongoing. Approximately 90 patients with moderate-to-severe alopecia areata will be enrolled in the study. In February 2018, an independent Data Monitoring Committee (DMC) completed a planned interim review of the safety data following 12 weeks of dosing with 4 mg of CTP-543 or placebo twice daily. Based on this review, the DMC provided its recommendation to continue with the current cohort and to initiate dosing of the second cohort, whereby patients will be administered 8 mg of CTP-543 or placebo twice daily for 24 weeks. The primary outcome measure of the Phase 2a trial is the proportion of patients achieving at least 50% relative reduction in hair loss as measured by the severity of alopecia tool (SALT) score from baseline at Week 24. If appropriate, the protocol may be amended to explore higher doses of CTP-543. We expect to announce topline data for the 4 mg and 8 mg cohorts in the fourth quarter of 2018.

CTP-692

Background on Schizophrenia

Schizophrenia is a chronic and devastating neuropsychiatric disorder that is ranked as a leading cause of disability worldwide. The disease afflicts nearly 1% of the world’s population, affecting both men and women equally, and striking all ethnic and socioeconomic groups with a similar level of prevalence. The illness is characterized by multiple symptoms that are categorized into three clusters known as positive symptoms (hallucinations and delusional behaviors), negative symptoms (anhedonia, social withdrawal and apathy), and cognitive dysfunction (diminished capacity for learning, memory, and executive function). The underlying basis of the current antipsychotic therapy is that excessive dopaminergic neurotransmission and dysfunctional D2 receptor signaling plays a key pathophysiological role in the disease, and consequently all typical and atypical antipsychotics in clinical practice possess some level of D2 antagonist activity. Currently available antipsychotic drugs exhibit efficacy for positive symptoms, but have been limited in their capacity to treat negative symptoms and cognitive deficits.

There is an extensive body of evidence supporting N-methyl-d-aspartate, or NMDA, receptor hypofunction as a key underlying mechanism of schizophrenia. The NMDA receptor comprises two binding domains and, in addition to requiring glutamate binding, activation with a co-agonist such as D-serine or glycine is necessary for NMDA receptor activation. D-serine is the most important endogenous co-agonist for synaptic transmission in the human central nervous system. It has been postulated for some time that administration of NMDA co-agonists could benefit patients with schizophrenia since there is evidence that plasma and cerebral spinal fluid, or CSF, levels of endogenous D-serine are reduced in patients with schizophrenia.

CTP-692 Opportunity

CTP-692 is a selective deuterium-modified analog of the endogenous amino acid, D-serine. Based on published preclinical and clinical effects of D-serine, the Company believes that CTP-692 has the potential to help restore NMDA receptor activity in key areas of the brain to improve clinical outcomes in patients with schizophrenia. Clinical studies have shown that levels of D-serine measured in the plasma and CSF of patients with schizophrenia are significantly lower than healthy controls. Academic studies have demonstrated that oral dosing of D-serine can result in dose-dependent improvement in positive, negative, and cognitive symptoms in schizophrenic patients when added to D2 antipsychotics. However, preclinical studies have demonstrated that D-serine can cause nephrotoxicity in rats. In addition, in some patients who received high doses of D-serine, clinical findings suggesting renal impairment were observed. As a result, the clinical development of D-serine has historically been limited.

In preclinical studies, CTP-692 has shown clear dose separation from D-serine in producing indicators of nephrotoxicity, suggesting that CTP-692 could have a larger therapeutic window and therefore be better-suited for development as a human therapeutic agent. CTP-692 will be developed as an adjunctive therapy along with standard antipsychotic medicines in patients with schizophrenia. Based on previous clinical studies of D-serine in patients with schizophrenia and other neurological diseases, Concert has designed CTP-692 to have similar pharmacology to D-serine and potentially improve upon its safety profile.

The Company intends to complete preclinical evaluation and advance CTP-692 into clinical development in 2018.

Preclinical Pipeline

We are currently assessing a number of preclinical assets as potential development candidates.

Collaboration Product Candidates

We have entered into several collaborative arrangements with companies to develop deuterium-modified versions of their marketed products. The deuterium product candidates may be developed for an existing indication or in new indications.

AVP-786

In February 2012, we granted Avanir Pharmaceuticals, Inc., or Avanir, an exclusive worldwide license to develop and commercialize deuterated dextromethorphan analogs, including the d_6-dextromethorphan compound, deudextromethorphan. Subsequent to our agreement, Avanir was acquired by Otsuka Pharmaceutical Co., Ltd. and is now a wholly owned subsidiary of Otsuka America, Inc.

Avanir is developing AVP-786, which is a combination of deudextromethorphan and an ultra-low dose of quinidine.

In November 2015, Avanir announced the initiation of the Phase 3 clinical program to evaluate the safety and efficacy of AVP-786 for the treatment of agitation associated with Alzheimer's disease. It expects to enroll approximately 850 patients in two U.S. Phase 3 trials. The U.S. Phase 3 trials are expected to be completed in 2019 and are expected to provide the basis for registration. Additionally, in October 2017, Avanir initiated a Phase 3 trial enrolling approximately 400 patients to evaluate the safety and efficacy of AVP-786 for the treatment of agitation associated with Alzheimer's disease including US sites as well as territories outside the United States.

CTP-730

In April 2013, we entered into a strategic worldwide collaboration with Celgene Pharmaceuticals, Inc., Celgene International Sarl and Celgene Corporation, together referred to as Celgene, related to certain deuterium-substituted compounds for the treatment of inflammation or cancer. While the collaboration has the potential to encompass multiple programs, it is initially focused on one program, CTP-730.

CTP-730 is a deuterated analog of apremilast. Apremilast is a selective phosphodiesterase 4 (PDE4) inhibitor approved for the treatment of psoriasis and psoriatic arthritis. We have completed the Phase 1 clinical evaluation of CTP-730. Once daily dosing of 50 mg of CTP-730 administered for seven days in the Phase 1 clinical trial demonstrated similar steady state exposure to

historical data for 30 mg of apremilast twice daily. Treatment with CTP-730 was generally well-tolerated and no serious adverse events were observed. Celgene is responsible for any development of CTP-730 beyond the completed Phase 1 clinical trials. Celgene is assessing the path forward for CTP-730. However, CTP-730 has not advanced into new trials at this time.

JZP-386

In February 2013, we licensed the commercial rights to deuterated analogs of sodium oxybate, including JZP-386, to Jazz Pharmaceuticals under an exclusive worldwide license agreement. Sodium oxybate is the active ingredient in Xyrem®, marketed in the United States by Jazz Pharmaceuticals to treat two of the key symptoms of narcolepsy, excessive daytime sleepiness and cataplexy. JZP-386 is being developed for the potential treatment of patients with narcolepsy.

In May 2015, we and Jazz Pharmaceuticals announced the completion of a Phase 1 clinical study. Clinical data from this Phase 1 study demonstrated that JZP-386 provided favorable deuterium-related effects, including higher serum concentrations and correspondingly increased pharmacodynamic, or PD, effects at clinically relevant time points, compared to Xyrem® (sodium oxybate) oral solution. The safety profile of JZP-386 was similar to that observed with Xyrem. Jazz Pharmaceuticals is responsible for any further development of JZP-386 and is continuing to evaluate once-nightly dosing.

ASSET PURCHASE AGREEMENT WITH VERTEX PHARMACEUTICALS FOR CTP-656

In July of 2017, we completed a previously announced asset purchase agreement under which Vertex acquired worldwide development and commercialization rights to CTP-656 and other assets related to the treatment of cystic fibrosis (CF). CTP-656, now known as VX-561, is an investigational cystic fibrosis transmembrane conductance regulator (CFTR) potentiator that has the potential to be used as part of future once-daily combination regimens of CFTR modulators that treat the underlying cause of cystic fibrosis. We received $160 million in cash upon closing, and we are eligible to receive up to $90 million in additional milestones based on regulatory approval in the U.S. and agreement for reimbursement in the first of the U.K., Germany or France.

INTELLECTUAL PROPERTY

We protect our product candidates through the use of patents, trade secrets and careful monitoring of our proprietary know-how. Our patents and patent applications, if they issue as patents, for our lead programs expire between 2028 and 2038. The expected expiration dates are before any patent term extension to which we may be entitled under the Drug Price Competition and Patent Term Restoration Act of 1984 (commonly referred to as the Hatch-Waxman Amendments) or equivalent laws in other jurisdictions where we have issued patents.

CTP-543

We hold a U.S. patent covering the composition of matter of deuterated analogs of ruxolitinib and corresponding U.S. patent applications. The patent and the patent applications are expected to expire in 2033. We have corresponding patent applications in Europe and Japan, which if they issue as patents, are expected to expire in 2033. We have retained all of the CTP-543 patent rights. In October 2017, the Patent Trial and Appeal Board, or PTAB, denied a petition by Incyte Corporation to institute inter partes review, or IPR, of Concert's U.S. Patent No. 9,249,149. The denial of Incyte's IPR petition upholds the validity of Concert's composition of matter patent claims covering CTP-543.

AVP-786

We hold U.S. patents and pending applications covering the composition of matter and methods of use of deudextromethorphan and other deuterated dextromethorphan analogs, as well as a U.S. patent application covering methods of use of certain other dextromethorphan compounds. These patents and patent applications are expected to expire between 2028 and 2030. We have corresponding patents and patent applications in Europe and Japan that are expected to expire in 2028. We have granted exclusive licenses under these patent rights to Avanir.

JZP-386

We hold two U.S. patents, as well as a corresponding U.S. patent application, covering the composition of matter of deuterated analogs of sodium oxybate, including JZP-386, and methods of using them for treating certain diseases and disorders, including narcolepsy. These patents and patent applications are expected to expire in 2030. We hold a corresponding European patent that is expected to expire in 2030. We also have U.S. patents covering pharmaceutical compositions of JZP-386 and methods of use of JZP-386 for treating certain diseases and disorders, including narcolepsy, as well as patent applications in the United States,

Europe and Japan, covering the composition of matter and methods of use of JZP-386, that are expected to expire in 2032. We have granted exclusive licenses under these patent rights to Jazz Pharmaceuticals.

CTP-730

We hold U.S. patents covering the composition of matter and methods of use of CTP-730. The patents are expected to expire in 2030. We also hold corresponding patents in Europe and Japan that are expected to expire in 2030. We have granted exclusive licenses under these patent rights to Celgene.

CTP-692

We hold a U.S. patent application covering compositions of matter and methods of use of CTP-692. The patent, if issued, is expected to expire in 2038. We have retained all of the CTP-692 patent rights.

Other Product Candidates

We also have patent portfolios that are related to a number of other programs. These patent portfolios are wholly owned by us. These include issued patents or patent applications that claim deuterated analogs of more than 90 non-deuterated drugs and drug candidates.

The term of individual patents depends upon the legal term of the patents in the countries in which they are obtained. In the United States and other countries in which we file, the patent term is 20 years from the earliest date of filing a non-provisional patent application.

Under U.S. patent law, the patent term may be extended by patent term adjustment due to certain failures of the U.S. Patent and Trademark Office to act in a timely manner. The patent term of a patent that covers an FDA-approved drug may also be eligible for patent term extension, which permits patent term restoration as compensation for the patent term lost during the FDA regulatory review process. The Hatch-Waxman Amendments permit a patent term extension of up to five years beyond the expiration of the patent. The length of the patent term extension is related to the length of time the drug is under regulatory review. Patent extension cannot extend the remaining term of a patent beyond a total of 14 years from the date of product approval and only one patent applicable to an approved drug may be extended. Similar provisions are available in Europe and other non-U.S. jurisdictions to extend the term of a patent that covers an approved drug. In the future, if and when our pharmaceutical products receive FDA approval, we expect to apply for patent term extensions on patents that we believe are eligible for such extension. We also intend to seek patent term extensions in other jurisdictions where these are available. However, there is no guarantee that the applicable authorities, including the FDA, will agree with our assessment of whether such extensions should be granted, and even if granted, the length of such extensions.

We also rely on trade secrets and careful monitoring of our proprietary know-how to protect aspects of our business that are not amenable to, or that we do not consider appropriate for, patent protection, including our DCE Platform, such as:

- our methods of evaluating candidate compounds for deuteration;
- our bioanalytical methods for identifying and measuring metabolites formed by the *in vitro* and *in vivo* metabolism of deuterated compounds;
- our analytical methods for evaluating how selective deuterium substitution affects different pharmacokinetic and metabolic parameters *in vitro* and *in vivo* systems; and
- our methods to determine the degree of deuterium substitution in compounds we manufacture.

MANUFACTURING AND SUPPLY

We currently rely, and expect to continue to rely, on third parties for the manufacture of product candidates for our clinical trials. We obtain these manufacturing services, including both the manufacture of the active pharmaceutical ingredients and finished drug product, on a purchase order basis and have not entered into long-term contracts with any of these third party manufacturers. We expect to rely on third parties for commercial manufacturing for any of our product candidates that receive marketing approval.

We believe that all of the deuterium that we use in manufacturing our product candidates is currently derived, directly or indirectly, from deuterium oxide. For most of our deuterium supply we rely on bulk supplies of deuterium oxide, which we currently source from multiple suppliers, including two located in North America, one of which is in the United States.

Certain of our manufacturing processes for our product candidates incorporate deuterium by using deuterated chemical intermediates or reagents that are derived from deuterium oxide. For the deuterated chemical intermediates and reagents, we may be subject to the license requirements applicable to deuterium oxide. In addition, the manufacturer of the deuterated chemical intermediate or reagent may themselves be required to obtain deuterium oxide under applicable licensing requirements. Most of the manufacturers of these deuterated chemical intermediates and reagents are not located in countries that produce bulk quantities of deuterium oxide. Therefore, our ability to source these deuterated chemical intermediates or reagents will depend on the ability of these manufacturers to obtain deuterium oxide from other countries.

We purchase our raw materials on a purchase order basis and have not entered into long-term contracts with any of these third party suppliers. We believe that the raw materials for our product candidates are readily available and that the cost of manufacturing for our product candidates will not preclude us from selling them profitably, if approved for sale.

COMMERCIALIZATION

We have not yet established a sales, marketing or product distribution infrastructure. We plan to use a combination of third party collaboration, licensing and distribution arrangements and a focused in-house commercialization capability to sell any of our products that receive marketing approval. With respect to the United States, we plan to seek to retain full commercialization rights for products that we can commercialize with a specialized sales force and to retain co-promotion or similar rights when feasible in indications requiring a larger commercial infrastructure. We plan to collaborate with third parties for commercialization in the United States of any products that require a large sales, marketing and product distribution infrastructure. We also plan to collaborate with third parties for commercialization outside the United States.

We plan to build a marketing and sales management organization to create and implement marketing strategies for any products that we market through our own sales organization and to oversee and support our sales force. We expect the responsibilities of the marketing organization would include developing educational initiatives with respect to approved products and establishing relationships with thought leaders in relevant fields of medicine.

COMPETITION

The development and commercialization of new drug products is highly competitive. We expect that we, and our collaborators, will face significant competition from major pharmaceutical companies, specialty pharmaceutical companies and biotechnology companies worldwide with respect to our product candidates that we, or they, may seek to develop or commercialize in the future. Specifically, there are a number of large pharmaceutical and biotechnology companies that currently market and sell products or are pursuing the development of product candidates for the treatment of neurologic disorders, autoimmune disorders and inflammation, which are key indications for our development programs. Our competitors may succeed in developing, acquiring or licensing technologies and drug products that are more effective, simpler to use, have fewer or more tolerable side effects or are less costly than any product candidates that we are currently developing or that we may develop or acquire, which could render our product candidates obsolete and noncompetitive.

Our commercial opportunity could be reduced or eliminated if our competitors develop and commercialize products that are safer, more effective, have fewer or less severe side effects, are more convenient or are less expensive than any products that we, or our collaborators, may develop. Our competitors also may obtain FDA or other marketing approval for their products before we, or our collaborators, are able to obtain approval for ours, which could reduce our ability to utilize expedited regulatory pathways and could result in our competitors establishing a strong market position before we, or our collaborators, are able to enter the market.

Many of our existing and potential future competitors may have significantly greater financial resources and expertise in research and development, manufacturing, nonclinical testing, conducting clinical trials, obtaining marketing approvals and marketing approved products than we do. Mergers and acquisitions in the pharmaceutical and biotechnology industries may result in even more resources being concentrated among a smaller number of our competitors. Smaller or early stage companies may also prove to be significant competitors, particularly through collaborative arrangements with large and established companies. These competitors also compete with us in recruiting and retaining qualified scientific and management personnel and establishing clinical trial sites and patient registration for clinical trials, as well as in acquiring technologies complementary to, or necessary for, our programs.

Many pharmaceutical and biotechnology companies have begun to cover deuterated analogs of their product candidates in patent applications and may develop these deuterated compounds. Some of these pharmaceutical and biotechnology companies may have significantly greater financial resources and expertise in research and development, manufacturing, nonclinical testing, conducting clinical trials, obtaining marketing approvals and marketing approved products than we do. In some cases, these competitors may be interested in developing deuterated compounds that we may be interested in developing for ourselves. In addition, these competitors may enter into collaborative arrangements or business combinations that result in their ability to research and develop deuterated compounds more effectively than us. Our potential competitors also include academic institutions, government agencies and other public and private research organizations.

CTP-543

CTP-543 is a deuterated analog of ruxolitinib, which is being developed for the treatment of moderate-to-severe alopecia areata, an autoimmune disease that results in partial or complete loss of hair on the scalp and body. If CTP-543 receives marketing approval for this indication, it may face competition from a number of other product candidates that are being studied for alopecia areata. A number of companies are developing JAK inhibitors having different subtype selectivities for the treatment of alopecia areata, including Aclaris Therapeutics, LEO Pharma and Pfizer.

CTP-692

CTP-692 is a deuterated analog of D-serine, which is being developed for the adjunctive treatment of schizophrenia. There are a number of candidates in clinical development for adjunctive treatment of schizophrenia, exploring cognitive or negative symptoms of the disease. For example, Acadia Pharmaceuticals and SyneuRx International [Taiwan] Corp. are developing adjunctive treatments for schizophrenia.

AVP-786

Avanir is developing AVP-786 for the treatment of agitation associated with Alzheimer's disease and other neurologic or psychological disorders. There are competing marketed drugs and product candidates in clinical development for each indication. Intra-Cellular Therapies, Axsome Therapeutics, and Otsuka Pharmaceuticals and their partner Lundbeck, are developing treatments for agitation in patients with Alzheimer's disease.

JZP-386

JZP-386 is a deuterated analog of sodium oxybate, which is being developed for the treatment of excessive daytime sleepiness and cataplexy in patients with narcolepsy. The current standard of care is sodium oxybate. Avadel Pharmaceuticals is developing an extended release formulation of sodium oxybate for the treatment of narcolepsy. Hikma Pharmaceuticals PLC developed a generic version of Xyrem® for the treatment of narcolepsy, which was approved by the FDA in January 2017 but will not be marketed until 2023, or earlier under certain circumstances.

CTP-730

CTP-730 is a phosphodiesterase 4, or PDE4, inhibitor that has potential for the treatment of various inflammatory diseases. The non-deuterated drug apremilast is marketed for certain types of psoriasis and psoriatic arthritis. It is also being evaluated for efficacy in other chronic inflammatory diseases. If CTP-730 receives marketing approval, the competition it may face will depend on the particular inflammatory disease for which it receives approval.

GOVERNMENT REGULATIONS

Government authorities in the United States, at the federal, state and local level, and in other countries and jurisdictions, including the European Union, extensively regulate, among other things, the research, development, testing, manufacture, manufacturing changes, packaging, storage, recordkeeping, labeling, advertising, promotion, sales, distribution, marketing, and import and export of pharmaceutical products. The processes for obtaining regulatory approvals in the United States and in foreign countries and jurisdictions, along with subsequent compliance with applicable statutes and regulations and other regulatory authorities, require the expenditure of substantial time and financial resources.

Review and Approval of Drugs in the United States

In the United States, the FDA regulates drugs under The Federal Food, Drug, and Cosmetic Act, or FDCA, and implementing regulations. The process of obtaining regulatory approvals and the subsequent compliance with appropriate federal, state, local

and foreign statutes and regulations requires the expenditure of substantial time and financial resources. Failure to comply with the applicable U.S. requirements at any time during the product development process, approval process or after approval, may subject an applicant and/or sponsor to a variety of administrative or judicial sanctions, including refusal by the FDA to approve pending applications, withdrawal of an approval, imposition of a clinical hold, issuance of warning letters and other types of letters, product recalls, product seizures, total or partial suspension of production or distribution, injunctions, fines, refusals of government contracts, restitution, disgorgement of profits, or civil or criminal investigations and penalties brought by the FDA and the Department of Justice or other governmental entities.

An applicant seeking approval to market and distribute a new drug product in the United States must typically undertake the following:

- completion of nonclinical laboratory tests, animal studies and formulation studies in compliance with the FDA's good laboratory practice, or GLP, regulations;
- production of well-characterized drug substance and drug product, and potentially matching placebos;
- submission to the FDA of an investigational new drug application, or IND application, which allows human clinical trials to begin unless the FDA otherwise informs the drug's sponsor within 30 days;
- agreement by clinical investigators and their clinical trial sites, followed by approval by an independent institutional review board, or IRB, representing each clinical site, before the clinical trial may be initiated at that site;
- performance of adequate and well-controlled human clinical trials in accordance with the FDA's current Good Clinical Practices, or GCPs, to establish the safety and efficacy of the proposed drug product for each indication;
- preparation and submission to the FDA of a New Drug Application, or NDA;
- review of the NDA by an FDA advisory committee, where appropriate or if applicable;
- satisfactory completion of one or more FDA inspections of the manufacturing facility or facilities at which the drug product, and the active pharmaceutical ingredient or active ingredients thereof, are produced to assess compliance with current good manufacturing practices and to assure that the facilities, methods and controls are adequate to ensure the product's identity, strength, quality and purity;
- payment of user fees and securing FDA approval of the NDA; and
- compliance with any post-approval requirements, including REMS and post-approval studies required by the FDA.

Nonclinical Studies and an IND

Nonclinical studies can include *in vitro* and animal studies to assess the potential for efficacy and adverse events and, in some cases, to establish a rationale for human therapeutic use. The conduct of nonclinical studies is subject to federal regulations and requirements, including GLP regulations. Other studies include laboratory evaluation of the purity, stability and physical form of the manufactured drug substance or active pharmaceutical ingredient and the physical properties, stability and reproducibility of the formulated drug or drug product. An IND sponsor must submit the results of the relevant nonclinical tests, including all tests conducted under GLP conditions, together with manufacturing information, analytical data, any available clinical data or literature and plans for clinical studies, among other things, to the FDA as part of an IND. Some nonclinical testing, such as longer-term toxicity testing, animal tests of reproductive adverse events and carcinogenicity, may continue after the IND is submitted. An IND automatically becomes effective 30 days after receipt by the FDA, unless before that time the FDA raises concerns or questions related to a proposed clinical trial and places the trial on clinical hold or partial clinical hold. In such a case, the IND sponsor and the FDA must resolve any outstanding concerns before the clinical trial can begin. As a result, submission of an IND may not result in the FDA allowing clinical trials to commence.

Following commencement of a clinical trial under an IND, the FDA may place a clinical hold on that trial. A clinical hold is an order issued by the FDA to the sponsor to delay a proposed clinical investigation or to suspend an ongoing investigation. A partial clinical hold is a delay or suspension of only part of the clinical work requested under the IND. For example, a specific protocol or part of a protocol is not allowed to proceed, while other protocols may do so. No more than 30 days after imposition of a clinical hold or partial clinical hold, the FDA will provide the sponsor a written explanation of the basis for the hold. Following issuance of a clinical hold or partial clinical hold, an investigation may only resume after the FDA has notified the

sponsor that the investigation may proceed. The FDA will base that determination on information provided by the sponsor correcting the deficiencies previously cited or otherwise satisfying the FDA that the investigation can proceed.

Human Clinical Studies in Support of an NDA

Clinical trials involve the administration of the investigational product to human subjects under the supervision of qualified investigators in accordance with GCP requirements, which include, among other things, the requirement that all research subjects provide their informed consent in writing before their participation in any clinical trial. Clinical trials are conducted under written study protocols detailing, among other things, the objectives of the study, the parameters to be used in monitoring safety and the effectiveness criteria to be evaluated. A protocol for each clinical trial and any subsequent protocol amendments must be submitted to the FDA as part of the IND. In addition, an IRB representing each institution participating in the clinical trial must review and approve the plan for any clinical trial before it commences at that institution, and the IRB must conduct continuing review and reapprove the study at least annually. The IRB must review and approve, among other things, the study protocol and informed consent information to be provided to study subjects. An IRB must operate in compliance with FDA regulations. Information about certain clinical trials must be submitted within specific timeframes to the NIH for public dissemination on their ClinicalTrials.gov website. Human clinical trials are typically conducted in three sequential phases, which may overlap or be combined:

Phase 1: The product candidate is initially introduced into healthy human subjects or patients with the target disease or condition and tested for safety, dosage tolerance, absorption, metabolism, distribution, excretion and, if possible, to gain an early indication of its effectiveness.

Phase 2: The product candidate is administered to a limited patient population to identify possible adverse effects and safety risks, to preliminarily evaluate the efficacy of the product for specific targeted diseases and to determine dosage tolerance and dosage for Phase 3 studies.

Phase 3: The product candidate is administered to an expanded patient population, generally at geographically dispersed clinical trial sites, in well-controlled clinical trials to generate enough data to statistically evaluate the efficacy and safety of the product for approval, to establish the overall risk-benefit profile of the product, and to provide adequate information for the labeling of the product.

Progress reports detailing the results of the clinical trials must be submitted at least annually to the FDA and written IND safety reports must be submitted to the FDA and investigators for serious and unexpected suspected adverse events, or any findings from animal or in vitro testing that suggests a significant risk for human subjects. Phase 1, Phase 2 and Phase 3 clinical trials may not be completed successfully within any specified period, or at all. Furthermore, the FDA or the sponsor may suspend or terminate a clinical trial at any time on various grounds, including a finding that the research subjects are being exposed to an unacceptable health risk. Similarly, an IRB can suspend or terminate approval of a clinical trial at its institution, or an institution it represents, if the clinical trial is not being conducted in accordance with the IRB's requirements or if the drug has been associated with unexpected serious harm to patients. Additionally, some clinical trials are overseen by an independent group of qualified experts organized by the clinical trial sponsor, known as the data monitoring committee (DMC) or board. This group provides authorization for whether or not a trial may move forward at designated check points based on review of certain data from the trial. The FDA will often inspect one or more clinical sites in late-stage clinical trials to assure compliance with GCP and the integrity of the clinical data submitted.

Submission of an NDA to the FDA

Assuming successful completion of required clinical testing and other requirements, the results of the nonclinical and clinical studies, together with detailed information relating to the product's chemistry, manufacture, controls and proposed labeling, among other things, are submitted to the FDA as part of an NDA requesting approval to market the drug product for one or more indications. Under federal law, the submission of most NDAs is additionally subject to a number of application and user fees.

Under certain circumstances, the FDA will waive the application fee for the first human drug application that a small business, defined as a company with less than 500 employees, or its affiliate submits for review. An affiliate is defined as a business entity that has a relationship with a second business entity if one business entity controls, or has the power to control, the other business entity, or a third party controls, or has the power to control, both entities.

The FDA conducts a preliminary review of an NDA within 60 days of its receipt and informs the sponsor by the 74th day after the FDA's receipt of the submission to determine whether the application is sufficiently complete to permit substantive review. The FDA may request additional information rather than accept an NDA for filing. In this event, the application must be

resubmitted with the additional information. The resubmitted application is also subject to review before the FDA accepts it for filing. Once the submission is accepted for filing, the FDA begins an in-depth substantive review. The FDA has agreed to specified performance goals in the review process of NDAs. Most such applications are meant to be reviewed within ten months from the date of filing, and most applications for "priority review" products are meant to be reviewed within six months of filing. The review process may be extended by the FDA for three additional months to consider new information or clarification provided by the applicant to address an outstanding deficiency identified by the FDA following the original submission.

Before approving an NDA, the FDA typically will inspect the facility or facilities where the product is manufactured. The FDA will not approve an application unless it determines that the manufacturing processes and facilities are in compliance with cGMP requirements and adequate to assure consistent production of the product within required specifications. Additionally, before approving an NDA, the FDA will typically inspect one or more clinical sites to assure compliance with GCP.

The FDA also may require submission of a risk evaluation and mitigation strategy, or REMS, plan to mitigate any identified or suspected serious risks. The REMS plan could include medication guides, physician communication plans, assessment plans, and elements to assure safe use, such as restricted distribution methods, patient registries, or other risk minimization tools.

The FDA may also refer an application for a novel drug to an advisory committee or explain why such referral was not required. Typically, an advisory committee is a panel of independent experts, including clinicians and other scientific experts, that reviews, evaluates and provides a recommendation as to whether the application should be approved and under what conditions. The FDA is not bound by the recommendations of an advisory committee, but it considers such recommendations carefully when making decisions.

The FDA's Decision on an NDA

On the basis of the FDA's evaluation of the NDA and accompanying information, including the results of the inspection of the manufacturing facilities, the FDA may issue an approval letter or a complete response letter. An approval letter authorizes commercial marketing of the product with specific prescribing information for specific indications. A complete response letter generally outlines the deficiencies in the submission and may require substantial additional testing or information in order for the FDA to reconsider the application. If and when those deficiencies have been addressed to the FDA's satisfaction in a resubmission of the NDA, the FDA will issue an approval letter. The FDA has committed to reviewing such resubmissions in two or six months depending on the type of information included. Even with submission of this additional information, the FDA ultimately may decide that the application does not satisfy the regulatory criteria for approval.

If the FDA approves a product, it may limit the approved indications for use for the product, require that contraindications, warnings or precautions be included in the product labeling, require that post-approval studies, including Phase 4 clinical trials, be conducted to further assess the drug's safety after approval, require testing and surveillance programs to monitor the product after commercialization, or impose other conditions, including distribution restrictions or other risk management mechanisms, including REMS, which can materially affect the potential market and profitability of the product. The FDA may prevent or limit further marketing of a product based on the results of post-market studies or surveillance programs. After approval, some types of changes to the approved product, such as adding new indications, manufacturing changes and additional labeling claims, are subject to further testing requirements and FDA review and approval.

The product may also be subject to official lot release, meaning that the manufacturer is required to perform certain tests on each lot of the product before it is released for distribution. If the product is subject to official release, the manufacturer must submit samples of each lot, together with a release protocol showing a summary of the history of manufacture of the lot and the results of all of the manufacturer's tests performed on the lot, to the FDA. The FDA may in addition perform certain confirmatory tests on lots of some products before releasing the lots for distribution. Finally, the FDA will conduct laboratory research related to the safety and effectiveness of drug products.

Expedited development and review programs

The FDA has various programs, including Fast Track Designation, Breakthrough Designation, priority review and accelerated approval, which are intended to expedite or facilitate the development and review of new drugs that meet certain criteria and/or provide for approval on the basis of surrogate endpoints.

New drugs are eligible for Fast Track designation if they are intended to treat a serious or life-threatening condition and demonstrate the potential to address an unmet medical need for the condition. Fast Track designation is intended to facilitate early and frequent meetings between the FDA and the sponsor company during development and the FDA may agree to review

sections of an NDA on a rolling basis before the complete NDA is submitted. A drug may be eligible for Breakthrough Designation if the drug is intended to treat a serious or life-threatening disease and preliminary clinical evidence indicates that the drug may demonstrate substantial improvement over existing therapies. Breakthrough Designation provides for frequent meetings between the sponsor and the FDA, involving senior and experience review staff, as appropriate, in a collaborative, cross-functional review and the assignment of an FDA project lead to facilitate efficient review of the development program and serve as a scientific liaison with the sponsor. Although Fast Track and Breakthrough designation do not affect the regulatory standards for approval, the frequent interactions with the FDA may facilitate a more efficient development program. In addition, the NDAs for drugs granted Fast Track and Breakthrough Designation may become eligible for priority review. Priority review is designed for drug candidates that offer significant improvements in safety or effectiveness or fill an unmet medical need and provides for an initial review within six months of acceptance of the NDA for filing, as compared to a standard review of ten months after acceptance for filing. Accelerated approval provides an earlier approval of drugs that treat serious diseases, and that fill an unmet medical need, based on a surrogate endpoint that FDA determines is reasonably likely to predict a clinical benefit. As a condition of approval, the FDA may require that the sponsor of a drug receiving accelerated approval perform post-marketing confirmatory clinical trials.

Even if a drug candidate qualifies for one or more of these programs, the FDA may later decide that the drug no longer meets the conditions for qualification or that the time period for FDA review will not be shortened.

Section 505(b)(2) NDAs

NDAs for most new drug products are based on two adequate and well-controlled clinical trials which must contain substantial evidence of the safety and efficacy of the proposed new product. These applications are generally submitted under Section 505(b)(1) of the FDCA. The FDA is, however, authorized to approve an alternative type of NDA under Section 505(b)(2) of the FDCA. This latter type of application allows the applicant to rely, in part, on the FDA's previous findings of safety and efficacy for a similar reference product, or may rely on published literature. Specifically, Section 505(b)(2) applies to NDAs for a drug for which the applicant relies, as part of its application, on investigations made to show whether or not the drug is safe and effective for use "that were not conducted by or for the applicant and for which the applicant has not obtained a right of reference or use from the person by or for whom the investigations were conducted."

Thus, Section 505(b)(2) authorizes the FDA to approve an NDA based on safety and effectiveness data that were not developed by the applicant. NDAs filed under Section 505(b)(2) may provide an alternate and potentially more expeditious pathway to FDA approval for new or improved formulations or new uses of previously approved products. If the 505(b)(2) applicant can establish that reliance on the FDA's previous approval is scientifically appropriate, the applicant may eliminate the need to conduct certain nonclinical or clinical studies of the new product. The FDA may also require companies to perform additional studies or measurements to support the change from the approved product. The FDA may then approve the new drug candidate for all or some of the label indications for which the referenced product has been approved, as well as for any new indication sought by the Section 505(b)(2) applicant.

If our partners submit NDAs for approval of deuterated analogs of marketed compounds for which they are the NDA holder, we believe that in certain cases the FDA may allow referencing of data from the non-deuterated compound in support of the application for approval of the deuterated product. Since this referencing by our partners would involve use of their own data and not require the use of another party's data, it would constitute a Section 505(b)(1) application.

Post-Approval Requirements

Drugs manufactured or distributed pursuant to FDA approvals are subject to pervasive and continuing regulation by the FDA, including, among other things, requirements relating to recordkeeping, periodic reporting, product sampling and distribution, advertising and promotion and reporting of adverse experiences with the product. After approval, most changes to the approved product, such as adding new indications or other labeling claims, are subject to prior FDA review and approval. There also are continuing, annual user fee requirements for any marketed products and the establishments at which such products are manufactured, as well as new application fees for supplemental applications with clinical data.

In addition, drug manufacturers and other entities involved in the manufacture and distribution of approved drugs are required to register their establishments with the FDA and state agencies, and are subject to periodic unannounced inspections by the FDA and these state agencies for compliance with cGMP requirements. Changes to the manufacturing process are strictly regulated and often require prior FDA approval before being implemented. FDA regulations also require investigation and correction of any deviations from cGMP and impose reporting and documentation requirements upon the sponsor and any third-party manufacturers that the sponsor may decide to use. Accordingly, manufacturers must continue to expend time, money, and effort in the area of production and quality control to maintain cGMP compliance.

Once an approval is granted, the FDA may withdraw the approval if compliance with regulatory requirements and standards is not maintained or if problems occur after the product reaches the market. Later discovery of previously unknown problems with a product, including adverse events or problems with manufacturing processes of unanticipated severity or frequency, or failure to comply with regulatory requirements, may result in revisions to the approved labeling to add new safety information; imposition of post-market studies or clinical trials to assess new safety risks; or imposition of distribution or other restrictions under a REMS program. Other potential consequences include, among other things:

- restrictions on the marketing or manufacturing of the product, complete withdrawal of the product from the market or product recalls;
- fines, warning letters or holds on post-approval clinical trials;
- refusal of the FDA to approve pending NDAs or supplements to approved NDAs, or suspension or revocation of product license approvals;
- product seizure or detention, or refusal to permit the import or export of products; or
- injunctions or the imposition of civil or criminal penalties.

The FDA strictly regulates marketing, labeling, advertising and promotion of products that are placed on the market. Drugs may be promoted only for the approved indications and in accordance with the provisions of the approved label. The FDA and other agencies actively enforce the laws and regulations prohibiting the promotion of off-label uses, and a company that is found to have improperly promoted off-label uses may be subject to significant liability.

In addition, the distribution of prescription pharmaceutical products is subject to the Prescription Drug Marketing Act, or PDMA, which regulates the distribution of drugs and drug samples at the federal level, and sets minimum standards for the registration and regulation of drug distributors by the states. Both the PDMA and state laws limit the distribution of prescription pharmaceutical product samples and impose requirements to ensure accountability in distribution.

Abbreviated New Drug Applications for Generic Drugs

In 1984, with passage of the Hatch-Waxman Amendments to the FDCA, Congress authorized the FDA to approve generic drugs that are the same as drugs previously approved by the FDA under the NDA provisions of the statute. To obtain approval of a generic drug, an applicant must submit an abbreviated new drug application, or ANDA, to the agency. In support of such applications, a generic manufacturer may rely on the nonclinical and clinical testing previously conducted for a drug product previously approved under an NDA, known as the reference listed drug, or RLD. To reference that information, however, the ANDA applicant must demonstrate, and the FDA must conclude, that the generic drug does, in fact, perform in the same way as the RLD it purports to copy.

Specifically, in order for an ANDA to be approved, the FDA must find that the generic version is identical to the RLD with respect to the active ingredients, the route of administration, the dosage form, and the strength of the drug. At the same time, the FDA must also determine that the generic drug is "bioequivalent" to the innovator drug. Under the statute, a generic drug is bioequivalent to a RLD if "the rate and extent of absorption of the generic drug do not show a significant difference from the rate and extent of absorption of the reference listed drug. . . ."

Upon approval of an ANDA, the FDA indicates that the generic product is "therapeutically equivalent" to the RLD and it assigns a therapeutic equivalence rating to the approved generic drug in its publication "Approved Drug Products with Therapeutic Equivalence Evaluations," also referred to as the "Orange Book." Physicians and pharmacists consider the therapeutic equivalence rating to mean that a generic drug is fully substitutable for the RLD. In addition, by operation of certain state laws and numerous health insurance programs, the FDA's designation of a therapeutic equivalence rating often results in substitution of the generic drug without the knowledge or consent of either the prescribing physician or patient.

Under the Hatch-Waxman Amendments, the FDA may not approve an ANDA until any applicable period of non-patent exclusivity for the RLD has expired. The FDCA provides a period of five years of data exclusivity for new drug containing a new chemical entity. For the purposes of this provision, a new chemical entity is a drug that contains no active moiety that has been previously approved by FDA in any other NDA. An active moiety is the molecule or ion responsible for the physiological or pharmacological action of the drug substance. In cases where such new chemical entity exclusivity has been granted, an ANDA may not be filed with the FDA until the expiration of five years unless the submission is accompanied by a Paragraph IV certification, in which case the applicant may submit its application four years following the original product approval.

The FDCA also provides for a period of three years of exclusivity if the NDA includes reports of one or more new clinical investigations, other than bioavailability or bioequivalence studies, that were conducted by or for the applicant and are essential to the approval of the application. This three-year exclusivity period often protects changes to a previously approved drug

product, such as a new dosage form, route of administration, combination or indication. Three year exclusivity would be available for a drug product that contains a previously approved active moiety, provided the statutory requirement for a new clinical investigation is satisfied. Unlike five year new chemical entity exclusivity, an award of three year exclusivity does not block the FDA from accepting ANDAs seeking approval for generic versions of the drug as of the date of approval of the original drug product.

Hatch-Waxman Patent Certification and the 30 Month Stay

NDA sponsors are required to list with the FDA each patent with claims that cover the applicant's product or a method of using the product. Each of the patents listed by the NDA sponsor is published in the Orange Book. When an ANDA applicant files its application with the FDA, the applicant is required to certify to the FDA concerning any patents listed for the reference product in the Orange Book, except for patents covering methods of use for which the ANDA applicant is not seeking approval.

Specifically, the applicant must certify with respect to each patent that:

- the required patent information has not been filed;
- the listed patent has expired;
- the listed patent has not expired, but will expire on a particular date and approval is sought after patent expiration; or
- the listed patent is invalid, unenforceable or will not be infringed by the new product.

A certification that the new product will not infringe the already approved product's listed patents or that such patents are invalid or unenforceable is called a Paragraph IV certification. If the applicant does not challenge the listed patents or indicate that it is not seeking approval of a patented method of use, the ANDA application will not be approved until all the listed patents claiming the referenced product have expired.

If the ANDA applicant has provided a Paragraph IV certification to the FDA, the applicant must also send notice of the Paragraph IV certification to the NDA and patent holders once the ANDA has been accepted for filing by the FDA. The NDA and patent holders may then initiate a patent infringement lawsuit in response to the notice of the Paragraph IV certification. The filing of a patent infringement lawsuit within 45 days after the receipt of a Paragraph IV certification automatically prevents the FDA from approving the ANDA until the earlier of 30 months, expiration of the patent, settlement of the lawsuit or a decision in the infringement case that is favorable to the ANDA applicant.

To the extent that the Section 505(b)(2) applicant is relying on studies conducted for an already approved product, the applicant is required to certify to the FDA concerning any patents listed for the approved product in the Orange Book to the same extent that an ANDA applicant would. As a result, approval of a 505(b)(2) NDA can be stalled until all the listed patents claiming the referenced product have expired, until any non-patent exclusivity, such as exclusivity for obtaining approval of a new chemical entity, listed in the Orange Book for the referenced product has expired, and, in the case of a Paragraph IV certification and subsequent patent infringement suit, until the earlier of 30 months, settlement of the lawsuit or a decision in the infringement case that is favorable to the Section 505(b)(2) applicant.

Pediatric Studies and Exclusivity

Under the Pediatric Research Equity Act of 2003, an NDA or supplement thereto must contain data that are adequate to assess the safety and effectiveness of the drug product for the claimed indications in all relevant pediatric subpopulations, and to support dosing and administration for each pediatric subpopulation for which the product is safe and effective. With enactment of the Food and Drug Administration Safety and Innovation Act, or FDASIA, in 2012, sponsors must also submit pediatric study plans within sixty days of an end-of-phase 2 meeting, or as may be agreed between the sponsor and FDA. Those plans must contain an outline of the proposed pediatric study or studies the applicant plans to conduct, including study objectives and design, any deferral or waiver requests, and other information required by regulation. The applicant, the FDA, and the FDA's internal review committee must then review the information submitted, consult with each other, and agree upon a final plan. The FDA or the applicant may request an amendment to the plan at any time.

The FDA may, on its own initiative or at the request of the applicant, grant deferrals for submission of some or all pediatric data until after efficacy and safety has been established in adults, or full or partial waivers from the pediatric data requirements. Additional requirements and procedures relating to deferral requests and requests for extension of deferrals are contained in FDASIA. Unless otherwise required by regulation, the pediatric data requirements do not apply to products with orphan designation.

Pediatric exclusivity is another type of non-patent marketing exclusivity in the United States and, if granted, provides for the attachment of an additional six months of marketing protection to the term of any existing regulatory exclusivity, including the non-patent and orphan exclusivity. This six-month exclusivity may be granted if an NDA sponsor submits pediatric data that fairly respond to a written request from the FDA for such data. The data do not need to show the product to be effective in the pediatric population studied; rather, if the clinical trial is deemed to fairly respond to the FDA's request, the additional protection is granted. If reports of requested pediatric studies are submitted to and accepted by the FDA within the statutory time limits, whatever statutory or regulatory periods of exclusivity or patent protection cover the product are extended by six months. This is not a patent term extension, but it effectively extends the regulatory period during which the FDA cannot accept or approve another application.

Patent Term Restoration and Extension

A patent claiming a new drug product may be eligible for a limited patent term extension under the Hatch-Waxman Amendments. Those Amendments permit a patent restoration of up to five years for patent term lost during product development and the FDA regulatory review. The restoration period granted is typically one-half the time between the effective date of an IND and the submission date of a NDA, plus the time between the submission date of a NDA and ultimate approval. Patent term restoration cannot be used to extend the remaining term of a patent past a total of 14 years from the product's approval date. Only one patent applicable to an approved drug product is eligible for the extension, and the application for the extension must be submitted prior to the expiration of the patent in question. The U.S. Patent and Trademark Office reviews and approves the application for any patent term extension or restoration in consultation with the FDA.

Review and Approval of Drug Products in the European Union

In order to market any product outside of the United States, a company must also comply with numerous and varying regulatory requirements of other countries and jurisdictions regarding quality, safety and efficacy and governing, among other things, clinical trials, marketing authorization, commercial sales and distribution of its products. Whether or not it obtains FDA approval for a product, the company would need to obtain the necessary approvals by the comparable foreign regulatory authorities before it can commence clinical trials or marketing of the product in those countries or jurisdictions. The approval process ultimately varies between countries and jurisdictions and can involve additional product testing and additional administrative review periods. The time required to obtain approval in other countries and jurisdictions might differ from and be longer than that required to obtain FDA approval. Regulatory approval in one country or jurisdiction does not ensure regulatory approval in another, but a failure or delay in obtaining regulatory approval in one country or jurisdiction may negatively impact the regulatory process in others.

Pursuant to the European Clinical Trials Directive, a system for the approval of clinical trials in the European Union has been implemented through national legislation of the member states. Under this system, an applicant must obtain approval from the competent national authority of a European Union member state in which the clinical trial is to be conducted. Furthermore, the applicant may only start a clinical trial after a competent ethics committee has issued a favorable opinion. Clinical trial applications must be accompanied by an investigational medicinal product dossier with supporting information prescribed by the European Clinical Trials Directive and corresponding national laws of the member states and further detailed in applicable guidance documents.

To obtain marketing approval of a drug under European Union regulatory systems, an applicant must submit a marketing authorization application, or MAA, either under a centralized or decentralized procedure.

The centralized procedure provides for the grant of a single marketing authorization by the European Commission that is valid for all European Union member states. The centralized procedure is compulsory for specific products, including for medicines produced by certain biotechnological processes, products designated as orphan medicinal products, advanced therapy products and products with a new active substance indicated for the treatment of certain diseases. For products with a new active substance indicated for the treatment of other diseases and products that are highly innovative or for which a centralized process is in the interest of patients, the centralized procedure may be optional.

Under the centralized procedure, the Committee for Medicinal Products for Human Use, or the CHMP, established at the European Medicines Agency, or EMA, is responsible for issuing an Opinion following the initial assessment of an MAA. Under the centralized procedure, the maximum timeframe for the evaluation of an MAA is 210 days, excluding clock stops, when additional information or written or oral explanation is to be provided by the applicant in response to questions of the CHMP. Accelerated evaluation might be granted by the CHMP in exceptional cases, when a medicinal product is of major interest from the point of view of public health and in particular from the viewpoint of therapeutic innovation. In this

circumstance, the EMA ensures that the opinion of the CHMP is given within 150 days. Following a positive Opinion by the CHMP the final authorization is issued by the European Commission.

The decentralized procedure is available to applicants who wish to market a product in various European Union member states where such product has not received marketing approval in any European Union member states before. The decentralized procedure provides for approval by one or more other, or concerned, member states of an assessment of an application performed by one member state designated by the applicant, known as the reference member state. Under this procedure, an applicant submits an application based on identical dossiers and related materials to the reference member state and concerned member states. The reference member state prepares a draft assessment report and drafts of the related materials within 120 days after receipt of a valid application. Within 90 days of receiving the reference member state's assessment report and related materials, each concerned member state must decide whether to approve the assessment report and related materials.

If a member state cannot approve the assessment report and related materials on the grounds of potential serious risk to public health, the disputed points are subject to a dispute resolution mechanism and may eventually be referred to the European Commission, whose decision is binding on all member states.

Data and Market Exclusivity in the European Union

In the European Union, new chemical entities qualify for eight years of data exclusivity upon marketing authorization and an additional two years of market exclusivity. This data exclusivity, if granted, prevents regulatory authorities in the European Union from referencing the innovator's data to assess a generic (abbreviated) application for eight years, after which generic marketing authorization can be submitted, and the innovator's data may be referenced, but not approved for two years. The overall ten-year period will be extended to a maximum of eleven years if, during the first eight years of those ten years, the marketing authorization holder obtains an authorization for one or more new therapeutic indications which, during the scientific evaluation prior to their authorization, are held to bring a significant clinical benefit in comparison with existing therapies. Even if a compound is considered to be a new chemical entity and the sponsor is able to gain the prescribed period of data exclusivity, another company nevertheless could also market another version of the drug if such company can complete a full MAA with a complete database of pharmaceutical test, nonclinical tests and clinical trials and obtain marketing approval of its product.

Pharmaceutical Coverage, Pricing and Reimbursement

Significant uncertainty exists as to the coverage and reimbursement status of products approved by the FDA and other government authorities. Sales of products will depend, in part, on the extent to which third-party payors, including government health programs in the United States such as Medicare and Medicaid, commercial health insurers and managed care organizations, provide coverage, and establish adequate reimbursement levels, for such products. The process for determining whether a payor will provide coverage for a product may be separate from the process for setting the price or reimbursement rate that the payor will pay for the product once coverage is approved. Third-party payors are increasingly challenging the prices charged for medical products and services and imposing controls to manage costs. Third-party payors may limit coverage to specific products on an approved list, or formulary, which might not include all of the approved products for a particular indication. In order to secure coverage and reimbursement for any product that might be approved for sale, a company may need to conduct expensive pharmacoeconomic studies in order to demonstrate the medical necessity and cost-effectiveness of the product, in addition to the costs required to obtain FDA or other comparable regulatory approvals. A payor's decision to provide coverage for a drug product does not imply that an adequate reimbursement rate will be approved. Third-party reimbursement may not be sufficient to maintain price levels high enough to realize an appropriate return on our investment in product development.

The containment of healthcare costs has also become a priority of federal, state and foreign governments, and the prices of drugs have been a focus in this effort. Governments have shown significant interest in implementing cost-containment programs, including price controls, restrictions on reimbursement and requirements for substitution of generic products. Adoption of price controls and cost-containment measures, and adoption of more restrictive policies in jurisdictions with existing controls and measures, could adversely affect our net revenue and results.

Outside of the United States, ensuring adequate coverage and payment for products remains challenging. Pricing of prescription pharmaceuticals is subject to governmental control in many countries. Pricing negotiations with governmental authorities can extend well beyond the receipt of regulatory marketing approval for a product and may require us to conduct a clinical trial that compares the cost effectiveness of our product candidates or products to other available therapies. The conduct of such a clinical trial could be expensive and result in delays in our commercialization efforts.

As a result, the marketability of any product which receives regulatory approval for commercial sale may suffer if the government and third-party payors fail to provide adequate coverage and reimbursement. In addition, an increasing emphasis on managed care in the United States has increased and will continue to increase the pressure on drug pricing. Coverage policies, third-party reimbursement rates and drug pricing regulation may change at any time. In particular, the Patient Protection and Affordable Care Act, as amended by the Health Care and Education Affordability Reconciliation Act, contains provisions that may reduce the profitability of drug products, including, for example, increased rebates for drugs sold to Medicaid programs, extension of Medicaid rebates to Medicaid managed care plans, mandatory discounts for certain Medicare Part D beneficiaries and annual fees based on pharmaceutical companies' share of sales to federal health care programs. Even if favorable coverage and reimbursement status is attained for one or more products that receive regulatory approval, less favorable coverage policies and reimbursement rates may be implemented in the future.

In the European Union, pricing and reimbursement schemes vary widely from country to country. Some countries provide that drug products may be marketed only after a reimbursement price has been agreed. Some countries may require the completion of additional studies that compare the cost-effectiveness of a particular product candidate to currently available therapies. For example, the European Union provides options for its member states to restrict the range of drug products for which their national health insurance systems provide reimbursement and to control the prices of medicinal products for human use. European Union member states may approve a specific price for a drug product or it may instead adopt a system of direct or indirect controls on the profitability of the company placing the drug product on the market. Other member states allow companies to fix their own prices for drug products, but monitor and control company profits. The downward pressure on health care costs in general, particularly prescription drugs, has become intense. As a result, increasingly high barriers are being erected to the entry of new products. In addition, in some countries, cross-border imports from low-priced markets exert competitive pressure that may reduce pricing within a country. Any country that has price controls or reimbursement limitations for drug products may not allow favorable reimbursement and pricing arrangements for any of our products.

Healthcare Law and Regulation

Healthcare providers, physicians and third-party payors will play a primary role in the recommendation and prescription of drug products that are granted marketing approval. Arrangements with third-party payors and customers are subject to broadly applicable fraud and abuse and other healthcare laws and regulations that may constrain the business or financial arrangements and relationships through which we market, sell and distribute our products for which we obtain marketing approval. Restrictions under applicable federal and state healthcare laws and regulations, include the following:

- the federal healthcare Anti-Kickback Statute prohibits, among other things, persons and entities from knowingly and willfully soliciting, offering, receiving or providing remuneration, directly or indirectly, in cash or in kind, to induce or reward either the referral of an individual for, or the purchase, order or recommendation of, any good or service, for which payment may be made, in whole or in part, under a federal healthcare program such as Medicare and Medicaid;

- the federal civil and criminal false claims laws, including the False Claims Act, which imposes civil monetary penalties, and provides for civil whistleblower or qui tam actions, against individuals or entities for, among other things, knowingly presenting, or causing to be presented, to the federal government, claims for payment that are false or fraudulent or making a false statement to avoid, decrease or conceal an obligation to pay money to the federal government;

- the federal Health Insurance Portability and Accountability Act of 1996, or HIPAA, which imposes federal criminal and civil liability for, among other things, knowingly and willingly executing, or attempting to execute, a scheme to defraud any healthcare benefit program or making false statements relating to healthcare matters;

- HIPAA, as amended by the Health Information Technology for Economic and Clinical Health Act and its implementing regulations, also imposes obligations, including mandatory contractual terms, with respect to safeguarding the privacy, security and transmission of individually identifiable health information;

- the federal false statements statute prohibits knowingly and willfully falsifying, concealing or covering up a material fact or making any materially false statement in connection with the delivery of or payment for healthcare benefits, items or services;

- the federal transparency requirements under the Patient Protection and Affordable Care Act, as amended by the Health Care and Education Reconciliation Act, or the Affordable Care Act, which requires certain manufacturers of drugs, devices, biologics and medical supplies to report to the Department of Health and Human Services information related to payments and other transfers of value to physicians and teaching hospitals and physician ownership and investment interests; and

- analogous state and foreign laws and regulations, such as state anti-kickback and false claims laws, which may apply to healthcare items or services that are reimbursed by non-governmental third-party payors, including private insurers.

Some state laws require pharmaceutical companies to comply with the pharmaceutical industry's voluntary compliance guidelines and the relevant compliance guidance promulgated by the federal government in addition to requiring drug manufacturers to report information related to payments to physicians and other health care providers or marketing expenditures. State and foreign laws also govern the privacy and security of health information in some circumstances, many of which differ from each other in significant ways and often are not preempted by HIPAA, thus complicating compliance efforts.

Regulation of Deuterium Oxide

We believe that all of the deuterium that we use in manufacturing our product candidates is currently derived, directly or indirectly, from deuterium oxide. For most of our deuterium supply we rely on bulk supplies of deuterium oxide, which we currently source from multiple suppliers, including two located in North America, one of which is located in the United States. In order to internationally transport any deuterium oxide that we purchase from foreign suppliers, we, or our U.S. supplier, may be required to obtain an export license from the country of origin and we may be required to obtain an International Import Certificate from the country of destination. We are also generally required to obtain an export license from the Nuclear Regulatory Commission before shipping deuterium oxide from the United States to any contract manufacturer in another country. Each of these documents specifies the maximum amount of deuterium oxide that we, or our suppliers, are permitted to either import or export. We have obtained a license from the Nuclear Regulatory Commission, or NRC, for the export of 20,000 kilograms of heavy water over the life of the license, which is valid until January 2019. We have obtained an additional export license from the NRC for the export of 20,000 kilograms of heavy water over the life of the license, which is valid until March 2020. In addition, in order to obtain additional supplies of deuterium oxide from one of the foreign suppliers from which we have previously purchased deuterium oxide, the supplier will be required to obtain an additional export license from the country of origin and, as part of the export license application process, we may be required to obtain a U.S. import certificate. While we and our suppliers have obtained similar licenses and certificates in the past, we or our suppliers may not be able to obtain them in the future in a timely manner or at all. We have not obtained an export license from the country in which our potential future foreign supplier is located. In addition, if any of our product candidates is approved by the FDA, then the FDA will also have regulatory jurisdiction over the manufacture and use of deuterium oxide in such product.

EMPLOYEES

As of December 31, 2017, we had 64 employees, 41 of whom were primarily engaged in research and product development activities. A total of 17 employees have Ph.D. degrees. None of our employees are represented by a labor union and we believe our relations with our employees are good.

FACILITIES

Our offices are located in Lexington, Massachusetts, consisting of approximately 50,000 square feet of leased office and laboratory space. The term of the lease expires in September 2018. In the third quarter of 2018, Concert expects to relocate its offices to a new location in Lexington, Massachusetts, consisting of approximately 55,500 square feet of leased office and laboratory space. The term of the new lease expires in 2029.

RESEARCH AND DEVELOPMENT

We have dedicated a significant portion of our resources to our efforts to develop our pipeline and product candidates. We incurred research and development expenses of $30.2 million, $37.0 million and $28.9 million during the years ended December 31, 2017, 2016 and 2015, respectively. We anticipate that a significant portion of our operating expenses in future periods will continue to be related to research and development as we continue to advance our product candidates through clinical development.

LEGAL PROCEEDINGS

We are not currently a party to any material legal proceedings.

AVAILABLE INFORMATION

We file reports and other information with the Securities and Exchange Commission, or SEC, as required by the Securities Exchange Act of 1934, as amended, which we refer to as the Exchange Act. You can find, copy and inspect information we file at the SEC's public reference room, which is located at 100 F Street, N.E., Room 1580, Washington, DC 20549. Please call the SEC at 1-800-SEC-0330 for more information about the operation of the SEC's public reference room. You can review our electronically filed reports and other information that we file with the SEC on the SEC's web site at http://www.sec.gov.

We were incorporated under the laws of the State of Delaware on April 12, 2006 as Concert Pharmaceuticals, Inc. Our principal executive offices are located at 99 Hayden Avenue, Suite 500, Lexington, Massachusetts, 02421, and our telephone number is (781) 860-0045. Our Internet website is http://www.concertpharma.com. We make available free of charge through our website our Annual Report on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K and amendments to those reports filed or furnished pursuant to Sections 13(a) and 15(d) of the Exchange Act. We make these reports available through our website as soon as reasonably practicable after we electronically file such reports with, or furnish such reports to, the SEC. In addition, we regularly use our website to post information regarding our business, product development programs and governance, and we encourage investors to use our website, particularly the information in the section entitled "Investors," as a source of information about us.

The foregoing references to our website are not intended to, nor shall they be deemed to, incorporate information on our website into this Annual Report on Form 10-K by reference.

Item 1A. Risk Factors.

Our business is subject to numerous risks. The following important factors, among others, could cause our actual results to differ materially from those expressed in forward-looking statements made by us or on our behalf in this Annual Report on Form 10-K and other filings with the Securities and Exchange Commission, or the SEC, press releases, communications with investors and oral statements. Actual future results may differ materially from those anticipated in our forward-looking statements. We undertake no obligation to update any forward-looking statements, whether as a result of new information, future events or otherwise.

RISKS RELATED TO OUR FINANCIAL POSITION AND NEED FOR ADDITIONAL CAPITAL

We have incurred significant losses since inception, expect to incur losses for at least the next several years and may never sustain profitability.

As of December 31, 2017, we had an accumulated deficit of $76.2 million. We have not generated any revenues from product sales and have financed our operations to date primarily through the public offering of our common stock, private placements of our preferred stock, debt financings and funding from collaborations, a patent assignment agreement, and an asset sale. We have not completed development of any product candidate and have devoted substantially all of our financial resources and efforts to research and development, including nonclinical studies and our clinical development programs. We expect to continue to incur significant expenses and increasing operating losses for at least the next several years. Our net losses may fluctuate significantly from quarter to quarter and year to year. Net losses and negative cash flows have had, and will continue to have, an adverse effect on our stockholders' equity and working capital.

We anticipate that our expenses will increase substantially if and as we:

- continue to develop and conduct nonclinical studies and clinical trials with respect to our product candidates;
- seek to identify additional product candidates;
- in-license or acquire additional product candidates;
- seek marketing approvals for our product candidates that successfully complete clinical trials;
- establish sales, marketing, distribution and other commercial infrastructure in the future to commercialize various products for which we may obtain marketing approval;
- require the manufacture of larger quantities of product candidates for clinical development and potentially commercialization;
- maintain, expand and protect our intellectual property portfolio;
- hire additional personnel;
- add equipment and physical infrastructure to support our research and development; and
- continue to implement the infrastructure necessary to support our product development and help us comply with our obligations as a public company.

Our ability to become and remain profitable depends on our ability to generate revenue. We do not expect to generate significant revenue unless and until we are, or one of our collaborators is, able to successfully commercialize one or more of our product candidates. This will require success in a range of challenging activities, including completing clinical trials of our product candidates, obtaining marketing approval for these product candidates, manufacturing, marketing and selling those products for which we, or our collaborators, may obtain marketing approval, satisfying any post-marketing requirements and obtaining reimbursement for our products from private insurance or government payors. We, and our collaborators, may never succeed in these activities and, even if we do, or one of our collaborators does, we may never generate revenues that are large enough for us to achieve profitability. Even if we do achieve profitability, we may not be able to sustain or increase profitability on a quarterly or annual basis. Our failure to become and remain profitable would decrease the value of our Company and could impair our ability to raise capital, expand our business, maintain our research and development efforts, diversify our pipeline of product candidates or continue our operations. A decline in the value of our Company could cause our stockholders to lose all or part of their investments in us.

We have a limited operating history and no history of commercializing pharmaceutical products, which may make it difficult to evaluate the prospects for our future viability.

We began operations in April 2006. Our operations to date have been limited to financing and staffing our Company, developing our technology and product candidates and establishing collaborations. We have not yet demonstrated an ability to successfully conduct an international multi-center clinical trial, conduct a large-scale pivotal clinical trial, obtain marketing

approvals, manufacture product on a commercial scale or arrange for a third party to do so on our behalf, or conduct sales and marketing activities necessary for successful product commercialization. Consequently, predictions about our future success or viability may not be as accurate as they could be if we had a longer operating history or a history of successfully developing and commercializing pharmaceutical products.

We will need substantial additional funding. If we are unable to raise capital when needed, we could be forced to delay, reduce or eliminate our product development programs or commercialization efforts.

Developing pharmaceutical products, including conducting nonclinical studies and clinical trials, is a very time-consuming, expensive and uncertain process that takes years to complete. We expect our expenses to increase in connection with our ongoing activities, particularly as we initiate new clinical trials of, initiate new research and nonclinical development efforts for and seek marketing approval for, our product candidates, or if we in-license or acquire product candidates. In addition, if we obtain marketing approval for any of our product candidates, we may incur significant commercialization expenses related to product sales, marketing, manufacturing and distribution to the extent that such sales, marketing and distribution are not the responsibility of one of our collaborators. In particular, the costs that we may be required to incur for the manufacture of any product candidate that receives marketing approval may be substantial. Manufacturing a deuterated drug at commercial scale may require specialized facilities, processes and materials. Furthermore, we will continue to incur costs associated with operating as a public company. Accordingly, we will need to obtain substantial additional funding in connection with our continuing operations. If we are unable to raise capital when needed or on attractive terms, we may be forced to delay, reduce or eliminate our research and development programs or any future commercialization efforts.

In any event, our existing cash and cash equivalents and investments will not be sufficient to fund all of the efforts that we plan to undertake or to fund the completion of development of any of our product candidates. Accordingly, we will be required to obtain further funding through public or private equity offerings, debt financings, collaborations and licensing arrangements or other sources. Adequate additional financing may not be available to us on acceptable terms, or at all. Our failure to raise capital when needed would have a negative impact on our financial condition and our ability to pursue our business strategy.

We believe our existing cash and cash equivalents and investments as of December 31, 2017 will enable us to fund our operating expenses and capital expenditure requirements into 2021. Our estimate as to how long we expect our cash and cash equivalents and investments to be able to continue to fund our operations is based on assumptions that may prove to be wrong, and we could use our available capital resources sooner than we currently expect. Changing circumstances could cause us to consume capital significantly faster than we currently anticipate, and we may need to spend more money than currently expected because of circumstances beyond our control. Our future funding requirements, both short-term and long-term, will depend on many factors, including:

- the progress, timing, costs and results of clinical trials of, and research and nonclinical development efforts for, our product candidates and potential product candidates, including current and future clinical trials;
- our current collaboration agreements and achievement of milestones under these agreements;
- our ability to enter into and the terms and timing of any additional collaborations, licensing, product acquisition or other arrangements that we may establish;
- the number of product candidates that we pursue and their development requirements;
- the outcome, timing and costs of seeking regulatory approvals;
- our headcount growth and associated costs as we expand our research and development and establish a commercial infrastructure;
- the costs of preparing, filing and prosecuting patent applications, maintaining and protecting our intellectual property rights and defending against intellectual property related claims; and
- the costs of operating as a public company.

Raising additional capital may cause dilution to our stockholders or require us to relinquish rights to our technologies or product candidates.

Until such time, if ever, as we can generate substantial product revenues, we expect to finance our cash needs through a combination of public or private equity offerings, debt financings, additional collaborations and licensing arrangements, and other sources. We do not have any committed external source of funds, other than cash held in escrow pursuant to the Vertex asset purchase agreement and potential milestone payments under the asset purchase agreement with Vertex, as well as potential milestone payments and royalties under our agreements with Avanir, Celgene, and Jazz Pharmaceuticals, each of which is subject to the achievement of development, regulatory and/or sales-based milestones with respect to our product candidates. To the extent that we raise additional capital through the sale of common stock, convertible securities or other equity securities, the ownership interests of our stockholders may be materially diluted, and the terms of these securities could

include liquidation or other preferences and anti-dilution protections that could adversely affect the rights of our stockholders. In addition, debt financing, if available, would result in increased fixed payment obligations and may involve agreements that include restrictive covenants that limit our ability to take specific actions, such as incurring additional debt, making capital expenditures or declaring dividends, that could adversely impact our ability to conduct our business.

If we raise additional funds through collaborations or marketing, distribution or licensing arrangements with third parties, we may have to relinquish valuable rights to our technologies, future revenue streams or product candidates, or grant licenses on terms that may not be favorable to us. If we are unable to raise additional funds when needed, we may be required to delay, limit, reduce or terminate our product development or future commercialization efforts or grant rights to develop and market product candidates that we would otherwise prefer to develop and market ourselves.

Any future indebtedness could adversely affect our ability to operate our business.

We could in the future incur indebtedness containing financial obligations and restrictive covenants, which could have significant adverse consequences, including:

- requiring us to dedicate a portion of our cash resources to the payment of interest and principal, reducing money available to fund working capital, capital expenditures, product development and other general corporate purposes;
- increasing our vulnerability to adverse changes in general economic, industry and market conditions;
- subjecting us to restrictive covenants that may reduce our ability to take certain corporate actions or obtain further debt or equity financing;
- limiting our flexibility in planning for, or reacting to, changes in our business and the industry in which we compete; and
- placing us at a competitive disadvantage compared to our competitors that have less debt or better debt servicing options.

Any financial obligations or restrictive covenants could negatively impact our ability to conduct our business.

RISKS RELATED TO THE DISCOVERY, DEVELOPMENT AND COMMERCIALIZATION OF OUR PRODUCT CANDIDATES

Clinical drug development involves a lengthy and expensive process with an uncertain outcome.

Clinical testing is expensive, time-consuming and uncertain as to outcome. We cannot guarantee that any clinical trials will be conducted as planned or completed on schedule, if at all. The clinical development of our product candidates is susceptible to the risk of failure inherent at any stage of drug development, including failure to demonstrate efficacy in a clinical trial or across a broad or definable population of patients, the occurrence of severe or medically or commercially unacceptable adverse events, fraudulent conduct by clinical investigators, failure to comply with protocols, applicable regulatory requirements or other determinations made by the Food and Drug Administration, or FDA, or any comparable foreign regulatory authority that a drug product is not approvable. It is possible that even if one or more of our product candidates has a beneficial effect, that effect will not be detected during clinical evaluation as a result of one or more of a variety of factors, including the size, duration, design, measurements, conduct or analysis of our clinical trials. Conversely, as a result of the same factors, our clinical trials may indicate an apparent positive effect of a product candidate that is greater than the actual positive effect, if any. Similarly, in our clinical trials, we may fail to detect toxicity of or intolerability caused by our product candidates, or mistakenly believe that our product candidates are toxic or not well tolerated when that is not in fact the case.

While we believe that our DCE Platform may enable drug discovery and clinical development that is more efficient and less expensive than conventional small molecule drug research and development, we may not be able to realize the advantages that we expect. In addition, while a key element of our drug discovery and development strategy involves utilizing existing information regarding non-deuterated compounds to assist the discovery and development of deuterated analogs of those compounds, not all of the product candidates that we develop are based on drugs or drug candidates that progressed into advanced clinical development. Particularly in these situations, existing information regarding the corresponding non-deuterated compound may not be sufficient to mitigate drug development risks.

In addition to the risk of failure inherent in drug development, certain of the deuterated compounds that we, and our collaborators, are developing and may develop in the future may be particularly susceptible to failure to the extent they are based on compounds that others have previously studied or tested, but did not progress in development due to safety,

tolerability or efficacy concerns or otherwise. Deuteration of these compounds may not be sufficient to overcome the problems experienced with the corresponding non-deuterated compound.

We may not be able to continue further clinical development of our wholly owned development programs, including CTP-543. If we are unable to develop, obtain marketing approval for or commercialize our wholly owned development programs, ourselves or through a collaboration, or experience significant delays in doing so, our business could be materially harmed.

We currently have no products approved for sale. The success of our wholly owned development programs will depend on several factors, including:

- in the case of CTP-543, our ability to safely and effectively treat moderate-to-severe alopecia areata;
- successful completion of clinical trials;
- receipt of marketing approvals from applicable regulatory authorities;
- the performance of our future collaborators, if any, for our programs;
- the extent of any required post-marketing approval commitments to applicable regulatory authorities;
- establishment of supply arrangements with third party raw materials suppliers and manufacturers;
- our ability to manufacture or arrange for the manufacture of our active pharmaceutical ingredients and drug products with sufficient quality, quantity, and reproducibility to support clinical trials and potential future commercialization;
- establishment of arrangements with third party manufacturers to obtain finished drug products that are appropriately packaged for sale;
- obtaining and maintaining patent, trade secret protection, regulatory exclusivity, and freedom to operate, both in the United States and internationally;
- amount of commercial sales, if and when approved;
- a continued acceptable safety profile of our programs following any marketing approval; and
- agreement by third party payors to reimburse patients for the costs of treatment with our products, and the terms of such reimbursement.

If we are unable to successfully develop, receive marketing approval for, and commercialize our wholly owned development programs, or experience delays as a result of any of these factors or otherwise, our business could be materially harmed.

If clinical trials of our product candidates fail to satisfactorily demonstrate safety and efficacy to the FDA and other regulators, we, or our collaborators, may incur additional costs or experience delays in completing, or ultimately be unable to complete, the development and commercialization of these product candidates.

We, or our collaborators, must complete nonclinical development and then conduct extensive clinical trials to demonstrate the safety and efficacy of our product candidates in humans in order to obtain marketing approval from regulatory authorities for the sale of our product candidates. Clinical testing is expensive, difficult to design and implement, can take many years to complete and is inherently uncertain as to outcome. Further, the outcome of nonclinical studies and early clinical trials may not be predictive of the success of later clinical trials, and interim results of a clinical trial do not necessarily predict final results. Moreover, nonclinical and clinical data are often susceptible to varying interpretations and analyses. Many companies in the pharmaceutical and biotechnology industries have suffered significant setbacks in late-stage clinical trials after achieving positive results in earlier development, and we cannot be certain that we will not face similar setbacks.

Any inability to successfully complete nonclinical and clinical development could result in additional costs to us, or our collaborators, and impair our ability to generate revenues from product sales, regulatory and commercialization milestones and royalties. In addition, if (1) we, or our collaborators, are required to conduct additional or larger clinical trials or other testing of our product candidates beyond the trials and testing that we, or they, contemplate, (2) we, or our collaborators, are unable to successfully complete clinical trials of our product candidates or other testing, (3) the results of these trials or tests are unfavorable, uncertain or are only modestly favorable, or (4) there are unacceptable safety concerns associated with our product candidates, we, or our collaborators, in addition to incurring additional costs, may:

- be delayed in obtaining marketing approval for our product candidates;
- not obtain marketing approval at all;
- obtain approval for indications or patient populations that are not as broad as intended or desired;
- obtain approval with labeling that includes significant use or distribution restrictions or significant safety warnings, including boxed warnings;
- be subject to additional post-marketing testing or other requirements; or
- be required to remove the product from the market after obtaining marketing approval.

Even if we, or our collaborators, believe that the results of clinical trials for our product candidates warrant marketing approval, the FDA or comparable foreign regulatory authorities may disagree and may not grant marketing approval of our product candidates.

If we, or our collaborators, experience any of a number of possible unforeseen events in connection with clinical trials of our product candidates, potential marketing approval or commercialization of our product candidates could be delayed or prevented.

We, or our collaborators, may experience numerous unforeseen events during, or as a result of, clinical trials that could delay or prevent marketing approval of our product candidates, including:

- toxicity or serious adverse effects may be observed in our nonclinical studies causing us to delay or abandon clinical trials;
- clinical trials of our product candidates may produce unfavorable or inconclusive results;
- we, or our collaborators, may decide, or regulators may require us or them, to conduct additional clinical trials and or develop and or validate new clinical endpoints for our clinical trials, or abandon product development programs;
- the number of patients required for clinical trials of our product candidates may be larger than we, or our collaborators, anticipate, patient enrollment in these clinical trials may be slower than we, or our collaborators, anticipate or participants may drop out of these clinical trials at a higher rate than we, or our collaborators, anticipate;
- our third party contractors or those of our collaborators, including those manufacturing our product candidates or components or ingredients thereof or conducting clinical trials on our behalf or on behalf of our collaborators, may fail to comply with regulatory requirements or meet their contractual obligations to us or our collaborators in a timely manner or at all;
- regulators or institutional review boards may not authorize us, our collaborators or our or their investigators to commence a clinical trial or conduct a clinical trial at a prospective trial site;
- we, or our collaborators, may have delays in reaching or fail to reach agreement on acceptable clinical trial contracts or clinical trial protocols with prospective trial sites;
- patients that enroll in a clinical trial may misrepresent their eligibility to do so or may otherwise not comply with the clinical trial protocol, resulting in the need to drop the patients or the sites from the clinical trial, increase the needed enrollment size for the clinical trial, extend the clinical trial's duration or cause spurious results;
- investigators may provide inaccurate or false data, resulting in spurious clinical results, an inadequate data set or regulators' unwillingness to approve a product;
- regulators, institutional review boards or data monitoring committees may require that we, or our collaborators, or our or their investigators suspend or terminate clinical research for various reasons, including noncompliance with regulatory requirements or their standards of conduct, a finding that the participants are being exposed to unacceptable health risks, undesirable side effects or other unexpected characteristics of the product candidate or findings of undesirable effects caused by a chemically or mechanistically similar drug or drug candidate;
- the FDA or comparable foreign regulatory authorities may disagree with our or our collaborators' clinical trial design or our or their interpretation of data from nonclinical studies and clinical trials;
- the FDA or comparable foreign regulatory authorities may change their requirements for approvability for a given product or for an indication after we have initiated work based on their previous guidance;
- the supply or quality of raw materials or manufactured product candidates or other materials necessary to conduct clinical trials of our product candidates may be insufficient, inadequate or not available at an acceptable cost, or we may experience interruptions in supply;
- we, or our manufacturing vendors, may not produce, or may not consistently produce material that meets necessary specifications for commercialization;
- the FDA or comparable foreign regulatory authorities may determine that our, or our manufacturing vendors, manufacturing or quality control processes fail to meet their specifications or guidelines; and
- the approval policies or regulations of the FDA or comparable foreign regulatory authorities may significantly change in a manner rendering our clinical data insufficient to obtain marketing approval.

Product development costs for us, or our collaborators, will increase if we, or they, experience delays in testing or pursuing marketing approvals and we, or they, may be required to obtain additional funds to complete clinical trials and prepare for possible commercialization of our product candidates. We, and our collaborators, do not know whether any nonclinical tests or clinical trials will begin as planned, will need to be restructured or will be completed on schedule, or at all. Significant nonclinical or clinical trial delays also could shorten any periods during which we, or our collaborators, may have the exclusive right to commercialize our product candidates or allow our competitors, or the competitors of our collaborators, to bring products to market before we, or our collaborators, do and impair our ability, or the ability of our collaborators, to successfully commercialize our product candidates and may harm our business and results of operations. In addition, many of the factors

that cause, or lead to, clinical trial delays may ultimately lead to the denial of marketing approval of any of our product candidates.

If we, or our collaborators, experience delays or difficulties in the enrollment of patients in clinical trials, our, or their, receipt of necessary regulatory approvals could be delayed or prevented.

We, or our collaborators, may not be able to initiate or continue clinical trials for any of our product candidates if we, or they, are unable to locate and enroll a sufficient number of eligible patients to participate in clinical trials as required by the FDA or comparable foreign regulatory authorities, such as the European Medicines Agency. Patient enrollment is a significant factor in the timing of clinical trials, and is affected by many factors, including:

- the size and nature of the patient population;
- the severity of the disease under investigation;
- the proximity of patients to clinical sites;
- the eligibility criteria for the trial;
- the design of the clinical trial, including any requirement to halt current treatment in connection with the trial;
- access to relevant clinical trial sites;
- efforts to facilitate timely enrollment;
- competing clinical trials;
- support by relevant industry or patient organizations with influence over clinical trial sites; and
- clinicians' and patients' perceptions as to the potential advantages and risks of the drug being studied in relation to other available therapies, including any new drugs that may be approved for the indications we are investigating.

Our inability, or the inability of our collaborators, to enroll a sufficient number of patients for our, or their, clinical trials could result in significant delays or may require us or them to abandon one or more clinical trials altogether. Enrollment delays in our, or their, clinical trials may result in increased development costs for our product candidates, delay or halt the development of and approval processes for our product candidates and jeopardize our, or our collaborators', ability to commence sales of and generate revenues from our product candidates, which could cause the value of our Company to decline and limit our ability to obtain additional financing, if needed.

Fast Track designation by the FDA may not lead to a faster development, regulatory review or approval.

Although CTP-543 has been granted Fast Track designation by FDA for the treatment of alopecia areata, Fast Track designation does not necessarily lead to a faster development pathway or regulatory review process, and does not increase the likelihood of regulatory approval. The FDA may later withdraw the designation if they believe the designation is no longer supported by the data from our clinical development program.

We, or our collaborators, may attempt to, and in some instances may be able to, secure clearances from the FDA or comparable foreign regulatory authorities to use other expedited development pathways, including a 505(b)(2) regulatory pathway. However, if we or our collaborators are unable to obtain such clearances, we, or they, may be required to conduct additional nonclinical studies or clinical trials beyond those that we, or they, contemplate, which could increase the expense of obtaining, and/or delay the receipt of, necessary marketing approvals relative to an expedited pathway.

The deuterated compounds that we produce and seek to develop can have similar pharmacological properties as their corresponding non-deuterated compounds. Therefore, we believe that we, or our collaborators, may, in some instances, be able to obtain clearance from the FDA or comparable foreign regulatory authorities to follow expedited development programs for some deuterated compounds that reference and rely on findings previously obtained from prior nonclinical studies or clinical trials of the corresponding non-deuterated compounds.

While we anticipate that following an expedited development pathway may be possible for some of our current and future product candidates, we cannot be certain that we, or our collaborators, will be able to secure clearance to follow such expedited development pathways on a regular basis from the FDA, or from comparable foreign regulatory authorities at all. In addition, if we follow, or one of our collaborators follows, such an expedited regulatory pathway and the FDA or comparable foreign regulatory authorities are not satisfied with the results of our having done so, such as might be the case if a deuterated compound is found to have undesirable side effects or other undesirable properties that were not anticipated based on the corresponding non-deuterated compound, the FDA or foreign regulatory authorities may be unwilling to grant clearance to follow expedited development pathways for other deuterated compounds.

In addition, emerging nonclinical or clinical data may indicate that reliance on data for the non-deuterated product can no longer be scientifically justified.

Consequently, we, or our collaborators, may be required to pursue full development programs with respect to any product candidates that we, or they, previously anticipated would be able to follow an expedited development pathway, including conducting a full range of nonclinical and clinical studies to attempt to establish the safety and efficacy of these product candidates. A need to conduct a full range of development activities would significantly increase the costs of development and length of time required before we, or our collaborators, could seek marketing approval of such a product candidate as compared to the costs and timing that we or they anticipate.

Serious adverse events, undesirable side effects or other unexpected properties of our product candidates, including those that we have licensed to collaborators, may be identified during development that could delay or prevent the product candidate's marketing approval.

All of our product candidates are in nonclinical and clinical development stages and their risk of failure is high. Serious adverse events or undesirable side effects caused by our product candidates, or competitor products with similar mechanisms of action, could cause us, one of our collaborators, an institutional review board, data monitoring committee, or regulatory authorities to interrupt, amend, delay or halt clinical trials of one or more of our product candidates and could result in a more restrictive label or the delay or denial of marketing approval by the FDA or comparable foreign regulatory authorities. A dose of a deuterated compound could, in comparison to an equal dose of the corresponding non-deuterated compound, result in altered exposure levels, distribution and half-life in the body and alter the levels of particular metabolites that are present in the body. These changes may cause serious adverse events or undesirable side effects that we or our collaborators did not anticipate, whether based on the characteristics of the corresponding non-deuterated compound or otherwise. If any of our product candidates is associated with serious adverse events or undesirable side effects or have properties that are unexpected, we, or our collaborators, may need to abandon development or limit development of that product candidate to certain uses or subpopulations in which the undesirable side effects or other characteristics are less prevalent, less severe or more acceptable from a risk-benefit perspective. Many compounds that initially showed promise in clinical or earlier stage testing have later been found to cause undesirable or unexpected side effects that prevented further development of the compound. In addition, unexpected adverse clinical effects of a deuterated product candidate, including either those identified by us or deuterated analogs of approved drugs being developed by any third parties, may create general concerns regarding deuteration technology that could delay the development of our product candidates.

The increasing use of social media platforms presents risks and challenges.

The increasing use of social media platforms presents risks and challenges. Social media increasingly is being used by third parties to communicate about our drug candidates and the diseases they are designed to treat. We believe that members of the Alopecia Areata community may be more active on social media as compared to other patient populations due to the demographics of this patient population. Social media practices in the pharmaceutical and biotechnology industries are evolving, which creates uncertainty and risk of noncompliance with regulations applicable to our business. For example, patients in clinical trials may use social media platforms to comment on the effectiveness of, or adverse experiences with, a drug candidate which could result in reporting obligations. In addition, there is a risk of inappropriate disclosure of sensitive information or negative or inaccurate posts or comments about us on any social networking website. If any of these events were to occur or we otherwise fail to comply with applicable regulations, we could incur liability, face restrictive regulatory actions or incur other harm to our business.

Even if one of our product candidates receives marketing approval, it may fail to achieve the degree of market acceptance by physicians, patients, third party payors and others in the medical community necessary for commercial success and the market opportunity for the product candidate may be smaller than we estimate.

Even if one of our product candidates, including those licensed to our collaborators, is approved by the appropriate regulatory authorities for marketing and sale, it may nonetheless fail to gain sufficient market acceptance by physicians, patients, third party payors and others in the medical or patient communities. For example, physicians are often reluctant to switch their patients from existing therapies even when new and potentially more effective or convenient treatments enter the market. Further, patients often acclimate to the therapy that they are currently taking and do not want to switch unless their physicians recommend switching products or they are required to switch therapies due to lack of reimbursement for existing therapies. If any of our product candidates receive negative publicity, patients may choose not to request them even if approved, or may not comply with taking them as prescribed.

Efforts to educate the medical community and third party payors on the benefits of our product candidates may require significant resources and may not be successful. If any of our product candidates is approved but does not achieve an adequate level of market acceptance, we may not generate significant revenues and we may not become profitable. The degree of market acceptance of our product candidates, including those licensed to our collaborators, if approved for commercial sale, will depend on a number of factors, including:

- the efficacy and safety of the product;
- the potential advantages of the product compared to alternative treatments;
- the prevalence and severity of any side effects;
- the clinical indications for which the product is approved;
- whether the product is designated under physician treatment guidelines as a first-line therapy or as a second- or third-line therapy;
- limitations or warnings, including distribution or use restrictions or burdensome prescription requirements contained in the product's approved labeling;
- our ability, or the ability of our collaborators, to offer the product for sale at commercially acceptable prices;
- the product's convenience and ease of administration compared to alternative treatments;
- the willingness of the target patient population to try, and of physicians to prescribe, the product;
- the strength of sales, marketing and distribution support;
- the approval of other new products for the same indications;
- the extent and success of counter-detailing efforts by our competitors;
- changes in the standard of care for the targeted indications for the product;
- the timing of market introduction of our approved products as well as competitive products; and
- availability and amount of reimbursement from government payors, managed care plans and other third party payors.

The potential market opportunities for our product candidates are difficult to precisely estimate. Our estimates of the potential market opportunities are predicated on many assumptions including industry knowledge and publications, third party research reports and other surveys. While we believe that our internal assumptions are reasonable, these assumptions involve the exercise of significant judgment on the part of our management, are inherently uncertain and the reasonableness of these assumptions has not been assessed by an independent source. If any of the assumptions proves to be inaccurate, the actual markets for our product candidates could be smaller than our estimates of the potential market opportunities.

If any of our product candidates receives marketing approval and we, or others, later discover that the drug is less effective than previously believed or causes undesirable side effects that were not previously identified, our ability to market the drug, or that of our collaborators, could be compromised.

Clinical trials of our product candidates are conducted in carefully defined subsets of patients who have agreed to enter into clinical trials. Consequently, it is possible that these individuals are not representative of the actual patient population or that our clinical trials may indicate an apparent positive effect of a product candidate that is greater than the actual positive effect, if any, or alternatively fail to identify undesirable side effects. If, following approval of a product candidate, we, or others, discover that the drug is less effective than previously believed or causes undesirable side effects that were not previously identified, any of the following adverse events could occur:

- regulatory authorities may withdraw their approval of the drug and/or seize the drug;
- we, or our collaborators, may be required to recall the drug or change the way the drug is administered;
- additional restrictions may be imposed on the marketing of, or the manufacturing processes for, the particular drug, including the addition of labeling statements, such as a "black box" warning or a contraindication;
- we may be subject to fines, injunctions or the imposition of civil or criminal penalties;
- we, or our collaborators, may be required to create a Medication Guide outlining the risks of the previously unidentified side effects for distribution to patients;
- we, or our collaborators, could be sued and held liable for harm caused to patients; and
- the drug may become less competitive.

Any of these events could have a material and adverse effect on our operations and business and could adversely impact our stock price.

If we are unable to establish sales, marketing and distribution capabilities or enter into sales, marketing and distribution arrangements with third parties, we may not be successful in commercializing any product candidates that we develop if and when those product candidates are approved.

We do not have a sales, marketing or distribution infrastructure and have no experience in the sale, marketing or distribution of pharmaceutical products. To achieve commercial success for any approved product, we must either develop a sales and marketing organization or outsource these functions to third parties. We expect to use a combination of third party collaboration, licensing and distribution arrangements and a focused in-house commercialization capability to sell any products that receive marketing approval.

We generally plan to seek to retain full commercialization rights for the United States for products that we can commercialize with a specialized sales force and to retain co-promotion or similar rights for the United States when feasible in indications requiring a larger commercial infrastructure. The development of sales, marketing and distribution capabilities will require substantial resources, will be time-consuming and could delay any product launch. If the commercial launch of a product candidate for which we recruit a sales force and establish marketing and distribution capabilities is delayed or does not occur for any reason, we could have prematurely or unnecessarily incurred these commercialization costs. This may be costly, and our investment could be lost if we cannot retain or reposition our sales and marketing personnel. In addition, we may not be able to hire or retain a sales force in the United States that is sufficient in size or has adequate expertise in the medical markets that we plan to target. If we are unable to establish or retain a sales force and marketing and distribution capabilities, our operating results may be adversely affected. If a potential partner has development or commercialization expertise that we believe is particularly relevant to one of our products, then we may seek to collaborate with that potential partner even if we believe we could otherwise develop and commercialize the product independently.

We currently expect to collaborate with third parties for commercialization in the United States of any products that require a large sales, marketing and product distribution infrastructure. We also expect to commercialize our product candidates outside the United States through collaboration, licensing and distribution arrangements with third parties. As a result of entering into arrangements with third parties to perform sales, marketing and distribution services, our product revenues or the profitability of these product revenues may be lower, perhaps substantially lower, than if we were to directly market and sell products in those markets. Furthermore, we may be unsuccessful in entering into the necessary arrangements with third parties or may be unable to do so on terms that are favorable to us. In addition, we may have little or no control over such third parties, and any of them may fail to devote the necessary resources and attention to sell and market our products effectively.

If we do not establish sales and marketing capabilities, either on our own or in collaboration with third parties, we will not be successful in commercializing any of our product candidates that receive marketing approval.

We face substantial competition from other pharmaceutical and biotechnology companies and our operating results may suffer if we fail to compete effectively.

The development and commercialization of new drug products is highly competitive. We expect that we, and our collaborators, will face significant competition from major pharmaceutical companies, specialty pharmaceutical companies and biotechnology companies worldwide with respect to our product candidates that we, or they, may seek to develop or commercialize in the future. Specifically, there are a number of large pharmaceutical and biotechnology companies that currently market and sell products or are pursuing the development of product candidates for the treatment of neurologic disorders, autoimmune disorders and inflammation, which are key indications for our development programs. Our competitors may succeed in developing, acquiring or licensing technologies and drug products that are more effective, simpler to use, have fewer or more tolerable side effects or are less costly than any product candidates that we are currently developing or that we may develop or acquire, which could render our product candidates obsolete and noncompetitive.

Avanir is developing AVP-786 for the treatment of agitation associated with Alzheimer's disease and other neurologic or psychological disorders. There are competing marketed drugs and product candidates in clinical development for each indication. Intra-Cellular Therapies, Acadia Pharmaceuticals, Axsome Therapeutics, and Otsuka Pharmaceuticals and their partner Lundbeck, are developing treatments for agitation in patients with Alzheimer's disease.

We are developing CTP-543 as an oral agent for the treatment of moderate-to-severe alopecia areata. If CTP-543 receives marketing approval for this indication, it may face competition from a number of other product candidates that are being studied for alopecia areata. Ruxolitinib is a Janus kinase, or JAK, inhibitor. A number of companies are pursuing development of JAK inhibitors with a range of subtype selectivities for the treatment of alopecia areata, including Aclaris Therapeutics, LEO Pharma and Pfizer.

We are developing CTP-692 as an adjunctive treatment of schizophrenia. There are a number of candidates in clinical development for adjunctive treatment of schizophrenia, exploring cognitive or negative symptoms of the disease, including Acadia Pharmaceuticals and SyneuRx International [Taiwan] Corp.

JZP-386 is being developed for the treatment of excessive daytime sleepiness and cataplexy in patients with narcolepsy. The current standard of care is sodium oxybate. Avadel Pharmaceuticals is developing an extended release formulation of sodium oxybate for the treatment of narcolepsy. Hikma Pharmaceuticals PLC developed a generic version of Xyrem® for the treatment of narcolepsy, which was approved by the FDA in January 2017 but will not be marketed until 2023, or earlier under certain circumstances.

CTP-730 is a phosphodiesterase 4, or PDE4, inhibitor that has potential for the treatment of various inflammatory diseases. The non-deuterated drug apremilast is marketed for certain types of psoriasis and psoriatic arthritis. It is also being evaluated for efficacy in other chronic inflammatory diseases. If CTP-730 receives marketing approval, the competition it may face will depend on the particular inflammatory disease for which it receives approval.

Our commercial opportunity could be reduced or eliminated if our competitors develop and commercialize products that are safer, more effective, have fewer or less severe side effects, are more convenient or are less expensive than any products that we, or our collaborators, may develop. Our competitors also may obtain FDA or other marketing approval for their products before we, or our collaborators, are able to obtain approval for ours, which could reduce our ability to utilize expedited regulatory pathways and could result in our competitors establishing a strong market position before we, or our collaborators, are able to enter the market.

Many of our existing and potential future competitors have significantly greater financial resources and expertise in research and development, manufacturing, nonclinical testing, conducting clinical trials, obtaining marketing approvals and marketing approved products than we do. Mergers and acquisitions in the pharmaceutical and biotechnology industries may result in even more resources being concentrated among a smaller number of our competitors. Smaller or early stage companies may also prove to be significant competitors, particularly through collaborative arrangements with large and established companies. These competitors also compete with us in recruiting and retaining qualified scientific and management personnel and establishing clinical trial sites and patient registration for clinical trials, as well as in acquiring technologies complementary to, or necessary for, our programs.

We also face competition in the development of deuterated compounds.

Many pharmaceutical and biotechnology companies have begun to cover deuterated analogs of their product candidates in patent applications and may develop these deuterated compounds. Some of these pharmaceutical and biotechnology companies may have significantly greater financial resources and expertise in research and development, manufacturing, nonclinical testing, conducting clinical trials, obtaining marketing approvals and marketing approved products than we do. In addition, other companies are broadly utilizing deuterium substitution for drug development, including Teva Pharmaceutical Industries Ltd. and DeuteRx LLC. In some cases, these competitors may be interested in developing deuterated compounds that we may be interested in developing for ourselves. In addition, these competitors may enter into collaborative arrangements or business combinations that result in their ability to research and develop deuterated compounds more effectively than us. Our potential competitors also include academic institutions, government agencies and other public and private research organizations.

If our competitors in the development of deuterated compounds are able to grow their intellectual property estates and create new and successful deuterated compounds more effectively than us, our ability to identify additional compounds for nonclinical and clinical development and obtain product revenues in future periods could be compromised, which could result in significant harm to our operations and financial position.

If the FDA or comparable foreign regulatory authorities approve generic versions of any of our products that receive marketing approval, or such authorities do not grant our products appropriate periods of data exclusivity before approving generic versions of our products, the sales of our products could be adversely affected.

Once an NDA is approved, the product covered thereby becomes a "reference listed drug" in the FDA's publication, "Approved Drug Products with Therapeutic Equivalence Evaluations." Manufacturers may seek approval of generic versions of reference listed drugs through submission of abbreviated new drug applications, or ANDAs, in the United States. In support of an ANDA, a generic manufacturer need not conduct clinical studies. Rather, the applicant generally must show that its product has the same active ingredient(s), dosage form, strength, route of administration and conditions of use or labeling as the reference listed drug and that the generic version is bioequivalent to the reference listed drug, meaning it is absorbed in the body at the same rate and to the same extent. Generic products may be significantly less costly to bring to market than the reference listed drug

and companies that produce generic products are generally able to offer them at lower prices. Thus, following the introduction of a generic drug, a significant percentage of the sales of any branded product or reference listed drug is typically lost to the generic product.

The FDA may not approve an ANDA for a generic product until any applicable period of non-patent exclusivity for the reference listed drug has expired. The Federal Food, Drug, and Cosmetic Act, or FDCA, provides a period of five years of non-patent exclusivity for a new drug containing a new chemical entity. Specifically, in cases where such exclusivity has been granted, an ANDA may not be filed with the FDA until the expiration of five years unless the submission is accompanied by a Paragraph IV certification that a patent covering the reference listed drug is either invalid or will not be infringed by the generic product, in which case the applicant may submit its application four years following approval of the reference listed drug. While we believe that our product candidates contain active ingredients that would be treated as new chemical entities by the FDA and, therefore, if approved, should be afforded five years of data exclusivity, the FDA may disagree with that conclusion and may approve generic products after a period that is less than five years. Manufacturers may seek to launch these generic products following the expiration of the applicable marketing exclusivity period, even if we still have patent protection for our product.

Competition that our products may face from generic versions of our products could materially and adversely impact our future revenue, profitability and cash flows and substantially limit our ability to obtain a return on the investments we have made in those product candidates.

To the extent we, or our collaborators, market products that are deuterated analogs of generic drugs that are approved or will be approved while we market our products, our products may compete against these generic products and the sales of our products could be adversely affected.

We anticipate that some of the products that we, or our collaborators, may develop will be deuterated analogs of approved drugs that are or will then be available on a generic basis. In addition, if we develop a product that is a deuterated analog of a non-generic approved drug, the FDA or comparable foreign regulatory authorities may also approve generic versions of the corresponding non-deuterated drug. If approved, we expect that our deuterated products will compete against these generic non-deuterated compounds if they are used in the same indications. Even if the approved indications are different for the deuterated and non-deuterated drugs, the generic non-deuterated drug may be used off-label, negatively affecting sales of our product. Efforts to educate the medical community and third party payors on the benefits of any product that we develop as compared to the corresponding non-deuterated compound, or generic versions of it, may require significant resources and may not be successful. If physicians, rightly or wrongly, do not believe that a product that we, or our collaborators, develop offers substantial advantages over the corresponding non-deuterated compound, or generic versions of the corresponding non-deuterated compound, or that the advantages offered by our product as compared to the corresponding non-deuterated compound, or its generic versions, are not sufficient to merit the increased price over the corresponding non-deuterated compound, or its generic versions, that we, or our collaborators, would seek, physicians might not prescribe that product. In addition, third party payors may refuse to provide reimbursement for a product that we, or our collaborators, develop when the corresponding non-deuterated compound, or generic versions of the corresponding non-deuterated compound, offer a cheaper alternative therapy in the same indication, or may otherwise encourage use of the corresponding non-deuterated compound, or generic versions of the corresponding non-deuterated compound, over our product, even if our product possesses favorable pharmaceutical properties or is labeled for a different indication.

Competition that our product candidates may face from any generic non-deuterated product on which our product candidate is based or a later-approved generic version of a branded non-deuterated product on which our product is based, could materially and adversely impact our future revenue, profitability and cash flows and substantially limit our ability to obtain a return on the investments we have made in those product candidates.

Even if we, or our collaborators, are able to commercialize any product candidate that we, or they, develop, the product may become subject to unfavorable pricing regulations, third party payor reimbursement practices or healthcare reform initiatives that could harm our business.

The commercial success of our product candidates will depend substantially, both domestically and abroad, on the extent to which the costs of our product candidates will be paid by health maintenance, managed care, pharmacy benefit and similar healthcare management organizations, or reimbursed by government health administration authorities, private health coverage insurers and other third party payors. Government authorities and third party payors, such as private health insurers and health maintenance organizations, decide which medications they will cover and establish reimbursement levels. The healthcare industry is acutely focused on cost containment, both in the United States and elsewhere. Government authorities and third party payors have attempted to control costs by limiting coverage and the amount of reimbursement for particular medications,

which could affect our ability or that of our collaborators to sell our product candidates profitably. These payors may not view our products, if any, as cost-effective, and coverage and reimbursement may not be available to our customers, or those of our collaborators, or may not be sufficient to allow our products, if any, to be marketed on a competitive basis. Cost-control initiatives could cause us, or our collaborators, to decrease the price we, or they, might establish for products, which could result in lower than anticipated product revenues. If reimbursement is not available, or is available only to limited levels, we, or our collaborators, may not be able to successfully commercialize our product candidates. Even if coverage is provided, the approved reimbursement amount may not be high enough to allow us, or our collaborators, to establish or maintain pricing sufficient to realize a sufficient return on our or their investments.

There is significant uncertainty related to third party payor coverage and reimbursement of newly approved drugs. Marketing approvals, pricing and reimbursement for new drug products vary widely from country to country. Some countries require approval of the sale price of a drug before it can be marketed. In many countries, the pricing review period begins after marketing or product licensing approval is granted. In some foreign markets, prescription pharmaceutical pricing remains subject to continuing governmental control even after initial approval is granted. As a result, we, or our collaborators, might obtain marketing approval for a product in a particular country, but then be subject to price regulations that delay commercial launch of the product, possibly for lengthy time periods, which may negatively impact the revenues we are able to generate from the sale of the product in that country. Adverse pricing limitations may hinder our ability or the ability of our collaborators to recoup our or their investment in one or more product candidates, even if our product candidates obtain marketing approval.

Third party payor coverage of newly approved drugs may be more limited than the indications for which the drugs are approved by the FDA or comparable foreign regulatory authorities. Moreover, eligibility for reimbursement does not imply that any drug will be paid for in all cases or at a rate that covers our costs, including research, development, manufacture, sale and distribution. Reimbursement rates may vary, by way of example, according to the use of the drug and the clinical setting in which it is used. Reimbursement rates may also be based on reimbursement levels already set for lower cost drugs or may be incorporated into existing payments for other services.

In addition, increasingly, third party payors are requiring higher levels of evidence of the benefits and clinical outcomes of new technologies, requiring burdensome comparison studies with currently approved drugs and challenging the prices charged. We, and our collaborators, cannot be sure that coverage will be available for any product candidate that we, or they, commercialize and, if available, that the reimbursement rates will be adequate. Further, the net reimbursement for drug products may be subject to additional reductions if there are changes to laws that presently restrict imports of drugs from countries where they may be sold at lower prices than in the United States. An inability to promptly obtain coverage and adequate payment rates from both government-funded and private payors for any our product candidates for which we, or our collaborators, obtain marketing approval could have a material adverse effect on our operating results, our ability to raise capital needed to commercialize products and our overall financial condition.

We may not be successful in our efforts to identify or discover additional potential product candidates.

A significant portion of our research involves the development of new deuterated compounds using our DCE Platform. These efforts may not be successful in creating compounds that have commercial value or therapeutic utility beyond the corresponding non-deuterated compound, or at all. Our research programs may initially show promise in creating potential product candidates, yet fail to yield viable product candidates for clinical development for a number of reasons, including:

- deuterated analogs of existing non-deuterated compounds or newly designed deuterated compounds may not demonstrate satisfactory efficacy or other benefits, such as convenience of dosing, increased tolerability, enhanced formation of desirable active metabolites or reduced formation of toxic metabolites;
- potential product candidates may, on further study, be shown to have harmful side effects or other characteristics that indicate that they are unlikely to be products that will receive marketing approval and achieve market acceptance; and
- pharmaceutical and biotechnology companies have begun to claim deuterated analogs of their compounds in patent filings, resulting in otherwise promising deuterated product candidates already being covered by patents or patent applications.

If we are unable to identify suitable additional compounds for nonclinical and clinical development, our ability to develop product candidates and obtain product revenues in future periods could be compromised, which could result in significant harm to our financial position and adversely impact our stock price.

Product liability lawsuits against us could divert our resources, cause us to incur substantial liabilities and limit commercialization of any products that we may develop.

We face an inherent risk of product liability claims as a result of the clinical testing of our product candidates despite obtaining appropriate informed consents from our clinical trial participants. We will face an even greater risk if we or our collaborators commercially sell any product that we may or they may develop. If we cannot successfully defend ourselves against product liability claims, we may incur substantial liabilities or be required to limit commercialization of our product candidates. Regardless of the merits or eventual outcome, liability claims may result in:

- decreased demand for our product candidates or products that we may develop;
- injury to our reputation and significant negative media attention;
- withdrawal of clinical trial participants;
- significant costs to defend litigation;
- distraction to our management diverting focus from business operations and strategy;
- initiation of investigations by regulators;
- product recalls, withdrawals or labeling, marketing or promotional restrictions;
- substantial monetary awards to trial participants or patients;
- loss of revenue; and
- the inability to commercialize any products that we may develop.

Although we maintain product liability insurance coverage, it may not fully cover potential liabilities that we may incur. The cost of any product liability litigation or other proceeding, even if resolved in our favor, could be substantial. We will need to increase our insurance coverage if and when we begin selling any product candidate that receives marketing approval. In addition, insurance coverage is becoming increasingly expensive. If we are unable to obtain or maintain sufficient insurance coverage at an acceptable cost or to otherwise protect against potential product liability claims, it could prevent or inhibit the development and commercial production and sale of our product candidates, which could adversely affect our business, financial condition, results of operations and prospects.

RISKS RELATED TO OUR DEPENDENCE ON THIRD PARTIES

We depend on collaborations with third parties for the development and commercialization of some of our product candidates and expect to continue to do so in the future. Our prospects with respect to those product candidates will depend in significant part on the success of those collaborations.

We have entered into collaborations with Avanir, Celgene and Jazz Pharmaceuticals for the development and commercialization of certain of our product candidates and expect to enter into additional collaborations in the future. We have limited control over the amount and timing of resources that our collaborators dedicate to the development or commercialization of our product candidates and our ability to generate revenues from these arrangements will depend on our collaborators' abilities to successfully perform the functions assigned to them in these arrangements. In addition, our collaborators have the right to abandon research or development projects and terminate applicable agreements, including funding obligations, prior to or upon the expiration of the agreed upon terms.

Collaborations involving our product candidates pose a number of risks, including:

- collaborators have significant discretion in determining the efforts and resources that they will apply to these collaborations;
- collaborators may not perform their obligations as expected;
- collaborators may not pursue development and commercialization of our product candidates or may elect not to continue or renew development or commercialization programs, based on clinical trial results, changes in the collaborators' strategic focus or available funding or external factors, such as an acquisition, that divert resources or create competing priorities;
- collaborators may delay clinical trials, provide insufficient funding for a clinical trial program, stop a clinical trial or abandon a product candidate, repeat or conduct new clinical trials or require a new formulation of a product candidate for clinical testing;
- product candidates developed in collaboration with us, including in particular product candidates based on deuteration of a collaborator's marketed drugs or advanced clinical candidates, may be viewed by our collaborators as competitive with their own product candidates or products, which may cause collaborators to cease to devote resources to the commercialization of our product candidates;

- a collaborator with marketing and distribution rights to one or more products may not commit sufficient resources to the marketing and distribution of such product or products;
- disagreements with collaborators, including disagreements over proprietary rights, contract interpretation or the preferred course of development, might cause delays or termination of the research, development or commercialization of product candidates, might lead to additional responsibilities for us with respect to product candidates, or might result in litigation or arbitration, any of which would be time-consuming and expensive;
- collaborators may not properly maintain or defend our intellectual property rights or may use our proprietary information in such a way as to invite litigation that could jeopardize or invalidate our intellectual property or proprietary information or expose us to potential litigation;
- collaborators may infringe the intellectual property rights of third parties, which may expose us to litigation and potential liability; and
- collaborations may be terminated and, if terminated, may result in a need for additional capital to pursue further development or commercialization of the applicable product candidates.

Collaboration agreements may not lead to development or commercialization of product candidates in the most efficient manner or at all. If a collaborator of ours is involved in a business combination, it could decide to delay, diminish or terminate the development or commercialization of any product candidate licensed to it by us.

We expect to seek to establish additional collaborations, and if we are not able to establish them on commercially reasonable terms, we may have to alter our development and commercialization plans.

Our drug development programs and the potential commercialization of our product candidates will require substantial additional cash to fund expenses. We may seek one or more collaborators for the development and commercialization of one or more of our product candidates.

We face significant competition in seeking appropriate collaborators. Whether we reach a definitive agreement for collaboration will depend, among other things, upon our assessment of the collaborator's resources and expertise, the terms and conditions of the proposed collaboration and the proposed collaborator's evaluation of a number of factors. Those factors may include the potential differentiation of our product candidate from its corresponding non-deuterated analog, design or results of clinical trials, the likelihood of approval by the FDA or comparable foreign regulatory authorities and the regulatory pathway for any such approval, the potential market for the product candidate, the proposed collaborator's perception of our freedom to operate in a particular market or markets without challenge, the costs and complexities of manufacturing and delivering the product to patients and the potential of competing products. The collaborator may also consider alternative product candidates or technologies that may be available for collaboration and whether such collaboration could be more attractive than the one with us for our product candidate.

Collaborations are complex and time-consuming to negotiate and document. In addition, there have been a significant number of recent business combinations among large pharmaceutical companies that have resulted in a reduced number of potential future collaborators. We are also restricted under the terms of certain of our existing collaboration agreements from entering into collaborations regarding or otherwise developing specified compounds that are similar to the compounds that are subject to those agreements and collaboration agreements that we enter into in the future may contain further restrictions on our ability to enter into potential collaborations or to otherwise develop specified compounds.

We may not be able to negotiate collaborations for our product candidates on a timely basis, on acceptable terms, or at all. If we are unable to do so, we may have to limit the development of the product candidate for which we are seeking to collaborate, reduce or delay its development program or one or more of our other development programs, delay its potential commercialization or reduce the scope of any sales or marketing activities, or increase our expenditures and undertake development or commercialization activities at our own expense. If we elect to increase our expenditures to fund development or commercialization activities on our own, we may need to obtain additional capital, which may not be available to us on acceptable terms or at all. If we do not have sufficient funds, we may not be able to further develop our product candidates or bring them to market and generate product revenue. In cases where we seek a collaborator for a product compound that is a deuterated analog of a compound that has been previously developed, failure to enter into a collaboration with the developer of the corresponding non-deuterated compound may result in a loss of the potential to obtain clearance from the FDA to follow expedited development programs that reference and rely on findings previously obtained from the developer's prior nonclinical or clinical studies of the corresponding non-deuterated compound.

We rely on third parties to conduct our clinical trials and some aspects of our research and nonclinical testing. If they terminate their relationships with us or do not perform satisfactorily, our business may be materially harmed.

We do not independently conduct clinical trials of any of our product candidates. We rely on third parties, such as contract research organizations, clinical data management organizations, medical institutions and clinical investigators, to conduct these clinical trials and expect to rely on these third parties to conduct clinical trials of any other product candidate that we develop. We also rely on third parties to conduct some aspects of our research and nonclinical testing and expect to rely on these third parties in the future. Any of these third parties may terminate their engagements with us under certain circumstances. If any of our relationships with these third parties terminate, we may not be able to enter into arrangements with alternative third parties on commercially reasonable terms, or at all. Switching to or adding additional third parties would involve additional cost and require management time and focus. In addition, there is a natural transition period when a new third party commences work, which could result in delays in our product development activities. Although we seek to carefully manage our relationships with our contract research organizations, any such challenges or delays could have a material adverse impact on our business, financial condition and prospects.

Our reliance on these third parties for clinical development activities limits our control over these activities but we remain responsible for ensuring that each of our studies is conducted in accordance with the applicable protocol, legal, regulatory and scientific standards. For example, notwithstanding the obligations of a contract research organization for a trial of one of our product candidates, we remain responsible for ensuring that each of our clinical trials is conducted in accordance with the general investigational plan and protocols for the trial. Moreover, the FDA requires us to comply with standards, commonly referred to as current Good Clinical Practices, or GCPs, for conducting, recording and reporting the results of clinical trials to assure that data and reported results are credible and accurate and that the rights, integrity and confidentiality of trial participants are protected. The FDA enforces these GCPs through periodic inspections of trial sponsors, principal investigators, clinical trial sites and institutional review boards. If we or our third party contractors fail to comply with applicable GCPs, the clinical data generated in our clinical trials may be deemed unreliable and the FDA may require us to perform additional clinical trials before approving our product candidates, which would delay the marketing approval process. We cannot be certain that, upon inspection, the FDA will determine that any of our clinical trials comply with GCPs.

Furthermore, these third parties are not our employees, and except for remedies available to us under our agreements with such contractors, we cannot control whether or not they devote sufficient time, skill and resources to our ongoing development programs. These contractors may also have relationships with other commercial entities, including our competitors, which could impede their ability to devote appropriate time to our clinical programs. If these third parties do not successfully carry out their contractual duties, meet expected deadlines or conduct their services in accordance with our contracts, regulatory requirements or our stated protocols, we may not be able to obtain, or may be delayed in obtaining, marketing approvals for our product candidates. If that occurs, we will not be able to, or may be delayed in our efforts to, successfully commercialize our product candidates. In such an event, our financial results and the commercial prospects for any product candidates that we seek to develop could be harmed, our costs could increase and our ability to generate revenues could be delayed, impaired or foreclosed.

We also rely on other third parties to store, label and distribute drug supplies for our clinical trials. Any performance failure on the part of our distributors could delay clinical development or marketing approval of our product candidates or commercialization of any resulting products, producing additional losses and depriving us of potential product revenue.

We are also required to register clinical trials and post the results of completed clinical trials on a government-sponsored database, such as ClinicalTrials.gov, within certain timeframes. Failure to do so can result in the inability to report our clinical results in certain publications, fines, adverse publicity and civil and criminal sanctions.

Because there are limited sources of deuterium, we, and our collaborators, are exposed to a number of risks and uncertainties associated with our deuterium supply.

We believe that all of the deuterium that we use in manufacturing our product candidates is currently derived, directly or indirectly, from deuterium oxide. For most of our deuterium supply, we rely on bulk supplies of deuterium oxide which we currently source from multiple suppliers, including two located in North America, one of which is in the United States.

In order to internationally transport any deuterium oxide that we purchase from our current or potential future foreign suppliers, we, or our suppliers, may be required to obtain an export license from the country of origin and we may be required to obtain an International Import Certificate or other governmental approvals or assurances from the country of destination. We are also required to obtain an export license from the Nuclear Regulatory Commission before shipping deuterium oxide from the United States to any contract manufacturer in another country. Export licenses and certain other required documents may specify the

maximum amount of deuterium oxide that we, or our suppliers, are permitted to either import or export. In order for us to obtain supplies of deuterium oxide from foreign suppliers, they may be required to obtain an export license from the country of origin and we may be required to obtain domestic governmental approvals or assurances. In addition, our current U.S. export licenses may be insufficient to meet our future requirements. We, or our suppliers, may not be able to obtain such licenses, approvals or assurances in a timely manner or at all.

Certain of our manufacturing processes for our product candidates incorporate deuterium by using deuterated chemical intermediates or reagents that are derived from deuterium oxide. For the deuterated chemical intermediates and reagents, we are not subject to the license requirements applicable to deuterium oxide; however the manufacturer of the deuterated chemical intermediate or reagent may themselves be required to obtain deuterium oxide under applicable licensing requirements. Most of the manufacturers of these deuterated chemical intermediates and reagents are not located in countries that produce bulk quantities of deuterium oxide. Therefore, our ability to source these deuterated chemical intermediates will depend on the ability of these manufacturers to obtain deuterium oxide from other countries. In the future we may arrange for supplies of deuterated chemical intermediates or reagents from manufacturers located in countries from which they can source deuterium oxide in bulk. However, contract manufacturers in these countries may not represent a viable alternative to our current suppliers. We do not have long-term agreements with our suppliers of deuterated chemical intermediates or reagents and we obtain some of these deuterated chemical intermediates or reagents from single sources, putting us at risk of uncontrolled cost increases or supply interruptions if we cannot establish alternative sourcing arrangements. Deuterated chemical intermediates may be expensive or difficult to obtain or may be produced by specialized techniques that are not widely practiced and we may not be able to enter into arrangements for larger scale supply of deuterated chemical intermediates on acceptable terms, or at all.

We estimate that our current sources of deuterium oxide will be sufficient to meet our anticipated requirements; however, we do not have long-term agreements with our current suppliers. If we are not able to establish or maintain supply arrangements, or any relevant foreign governments decide to withhold authorizations for the export of deuterium oxide that we seek, we may be unable to secure alternative sources. If we are unable to obtain sufficient supplies of deuterium oxide from our current suppliers or our potential future foreign supplier, we would be forced to either seek alternative suppliers of deuterium oxide, likely in other countries, or alternative sources of deuterium. Such alternative supplies may not be available to us on acceptable terms, or at all.

If we are unable to obtain sufficient supplies of deuterium, our ability to produce our product candidates would be impeded and our business, financial condition and prospects could be harmed. In particular, certain of our manufacturing processes are projected to require particularly large quantities of deuterium for late-stage clinical trials and for commercialization. Consequently, any adverse impact on our ability to obtain deuterium oxide from our current suppliers, import deuterium oxide into the United States or export deuterium oxide to our contract manufacturers could have a particularly severe impact on our ability to develop or commercialize those product candidates.

Similarly, to develop and commercialize any of our licensed product candidates, our collaborators will need to obtain supplies of deuterium and will be subject to risks and requirements in connection with sourcing deuterium that are similar to the ones that we face. In addition, if any of our product candidates is approved by the FDA, then the FDA will also have regulatory jurisdiction over the manufacture and use of deuterium oxide and deuterated chemical intermediates or reagents in such products. Any adverse impact on our, or our collaborators', ability to obtain deuterium could delay or prevent the development or commercialization of our product candidates, which could have a material adverse effect on our business.

We contract with third parties for the manufacture and distribution of our product candidates for nonclinical and clinical testing and expect to continue to do so in connection with our future development and commercialization efforts. This reliance on third parties increases the risk that we will not have sufficient quantities of our product candidates or such quantities at an acceptable cost, which could delay, prevent or impair our development or commercialization efforts.

We currently rely, and expect to continue to rely, on third party contractors to manufacture nonclinical and clinical supplies of our product candidates and to package, label and ship these supplies. We expect to rely on third party contractors to manufacture, formulate, package, label and distribute commercial quantities of any product candidate that we commercialize following approval for marketing by applicable regulatory authorities. Reliance on such third party contractors entails risks, including:

- manufacturing delays, including if our third party contractors give greater priority to the supply of other products over our product candidates or if they otherwise do not satisfactorily perform according to the terms of the agreements between us and them;

- the possible termination or nonrenewal of agreements by our third party contractors at a time that is costly or inconvenient for us;
- potentially limited numbers of available contractors due to the need for uncommon equipment or expertise, or pre-existing conflicts of interest;
- the possible breach by the third party contractors of our agreements with them;
- possible theft of intellectual property or trade secrets;
- possible theft of our materials, including starting materials, intermediates, active pharmaceutical ingredients, or drug products;
- the failure of third party contractors to comply with applicable regulatory requirements;
- the possible mislabeling of clinical supplies, potentially resulting in the wrong dose amounts being supplied or active drug or placebo not being properly identified;
- possible contamination, or nonconformance with product or packaging specifications, of our product during or after its manufacture;
- possible interruptions in our contractors' operations, including departure of key personnel, disruption due to merger and acquisitions activities or supply chain disruptions;
- the possibility of clinical supplies not being delivered to clinical sites on time, leading to clinical trial interruptions, or of drug supplies not being distributed to commercial vendors in a timely manner, resulting in lost sales; and
- the possible misappropriation of our proprietary information, including our trade secrets and know-how.

If any of our product candidates are approved by any regulatory agency, we plan to enter into agreements with third party contract manufacturers for the commercial production and distribution of those products. It may be difficult for us to reach agreement with a contract manufacturer on satisfactory terms or in a timely manner, especially if the manufacturer believes it is uniquely suited to use our deuterium chemistry manufacturing processes or otherwise has unusual market power, or that our deuterium chemistry manufacturing processes bear greater production risks than manufacture of non-deuterated compounds. In addition, we may face competition for access to manufacturing facilities as there are a limited number of contract manufacturers operating under current good manufacturing practices, or cGMPs, that are capable of manufacturing our product candidates. Consequently, we may not be able to reach agreement with third party manufacturers on satisfactory terms, which could delay our commercialization efforts.

Third party manufacturers are required to comply with cGMPs and similar regulatory requirements outside the United States. Facilities used by our third party manufacturers must be approved by the FDA after we submit an NDA and before potential approval of the product candidate. Similar regulations apply to manufacturers of our product candidates for use or sale in foreign countries. We do not directly control the manufacturing process and are completely dependent on our third party manufacturers for compliance with the applicable regulatory requirements for the manufacture of our product candidates. If our manufacturers fail to consistently manufacture material that conforms to the strict regulatory requirements of the FDA and any applicable foreign regulatory authority, they will not be able to secure the applicable approval for their manufacturing facilities. If these facilities are not approved for commercial manufacture, we may need to find alternative manufacturing facilities, which could result in delays in obtaining approval for the applicable product candidate.

In addition, our manufacturers are subject to ongoing periodic inspections by the FDA and corresponding state and foreign agencies for compliance with cGMPs and similar regulatory requirements both prior to and following the receipt of marketing approval for any of our product candidates. Some of these inspections may be unannounced. Failure by any of our manufacturers to comply with applicable cGMPs or other regulatory requirements could result in sanctions being imposed on us, including fines, injunctions, civil penalties, delays, suspensions or withdrawals of approvals, operating restrictions, interruptions in supply and criminal prosecutions, any of which could significantly and adversely affect supplies of our product candidates and have a material adverse impact on our business, financial condition and results of operations.

Our current and anticipated future dependence upon others for the manufacture of our product candidates may adversely affect our future profit margins and our ability to commercialize any products that receive marketing approval on a timely and competitive basis.

RISKS RELATED TO OUR INTELLECTUAL PROPERTY

If we are unable to obtain and maintain sufficient patent protection for our product candidates, or if the scope of the patent protection is not sufficiently broad, our competitors could develop and commercialize products similar or identical to ours, and our ability to successfully commercialize our product candidates may be adversely affected.

Our success depends in large part on our ability to obtain and maintain patent protection in the United States and other countries with respect to our proprietary product candidates. If we do not adequately protect our intellectual property,

competitors may be able to erode or negate any competitive advantage we may have, which could harm our business and ability to achieve profitability. To protect our proprietary position, we file patent applications in the United States and abroad related to our novel product candidates that are important to our business. The patent application and approval process is expensive, uncertain and time-consuming. We may not be able to file and prosecute all necessary or desirable patent applications at a reasonable cost or in a timely manner. Neither deuterium itself, nor the general concept of selective substitution of deuterium for hydrogen in existing pharmaceutical compounds, is patentable; therefore we usually seek patents on a compound-by-compound basis or on a relatively narrow genus of compounds. We are not guaranteed that patents will issue protecting any particular deuterated compound for which we seek patent protection. We also cannot guarantee that another company will not be able to find a different pattern of deuterium substitution that is equally or more effective in improving the characteristics of a non-deuterated compound, then patenting that deuterated compound and competing with us.

Our ability to obtain and maintain patent protection for our product candidates may be limited if disclosures of non-deuterated compounds are held to anticipate or make obvious claims of deuterated analogs of the same or similar compounds in any given territory. In addition, several large pharmaceutical and biotechnology companies have begun to pursue patent protection for deuterated analogs of their products and product candidates, and may in the future obtain patent protection that covers deuterated analogs of those product candidates. If patents directed primarily to non-deuterated compounds are deemed to protect deuterated analogs of those compounds or patent claims on deuterated analogs of compounds become common in the biotechnology and pharmaceutical industries, these factors may limit, in part or in whole, our ability to seek and obtain patent protection for new product candidates based on deuterium modification of compounds. It may also limit in part or in whole, our ability to develop new product candidates based on deuterium modification of such compounds without obtaining a license from those patent holders.

The patent position of biotechnology and pharmaceutical companies generally is highly uncertain. No consistent policy regarding the breadth of claims allowed in biotechnology and pharmaceutical patents has emerged to date in the United States or in many foreign jurisdictions. In addition, the determination of patent rights with respect to pharmaceutical compounds commonly involves complex legal and factual questions, which has in recent years been the subject of much litigation. As a result, the issuance, scope, validity, enforceability and commercial value of our patent rights are highly uncertain.

Assuming the other requirements for patentability are met, currently, the first to file a patent application is generally entitled to the patent. However, prior to March 16, 2013, in the United States, the first to invent was entitled to the patent. Publications of discoveries in the scientific literature often lag behind the actual discoveries, and patent applications in the United States and other jurisdictions are typically not published until 18 months after filing, or in some cases not at all. Therefore we cannot be certain that we were the first to make the inventions claimed in our patents or pending patent applications, or that we were the first to file for patent protection of such inventions.

We may also become involved in opposition, derivation, reexamination, post grant review, inter partes review or interference proceedings, in the United States or elsewhere, challenging our patent rights or the patent rights of others. For example, in April 2017, Incyte Corporation filed an inter parties review, or IPR, petition with the PTAB, of the U.S. PTO, challenging the validity of U.S. Patent No. 9,249,149, which claims deuterium-modified versions of ruxolitinib, including CTP-543. In October 2017, the PTAB declined to institute the IPR. In November 2017, Incyte filed a request for reconsideration of the PTAB's decision, which remains pending. An adverse determination in any such submission, proceeding or litigation could reduce the scope of, or invalidate, our patent rights, allow third parties to commercialize our technology or product candidates and compete directly with us, without payment to us, or result in our inability to manufacture or commercialize products without infringing third party patent rights.

Our pending and future patent applications may not result in patents being issued which protect our product candidates, in whole or in part, or which effectively prevent others from commercializing competitive products. Changes in either the patent laws or interpretation of the patent laws in the United States and other countries may diminish the value of our patents or narrow the scope of our patent protection. In addition, the laws of foreign countries may not protect our rights to the same extent or in the same manner as the laws of the United States. For example, European patent law restricts the patentability of methods of treatment of the human body more than United States law does.

Even if our patent applications issue as patents, they may not issue in a form that will provide us with any meaningful protection, prevent competitors from competing with us or otherwise provide us with any competitive advantage. Our competitors may be able to circumvent our patents by developing similar or alternative technologies or products in a non-infringing manner. Our competitors may also seek approval to market their own products similar to or otherwise competitive with our products. Alternatively, our competitors may seek to market generic versions of any approved products by submitting ANDAs to the FDA in which they claim that patents owned or licensed by us are invalid, unenforceable or not infringed. In these circumstances, we may need to defend or assert our patents, or both, including by filing lawsuits alleging patent

infringement. In any of these types of proceedings, a court or other agency with jurisdiction may find our patents invalid or unenforceable, or that our competitors are competing in a non-infringing manner. In certain territories, losses to an infringing product may not be sufficiently great to justify the costs of challenging the infringer and asserting our rights. In some situations, governments have allowed or enabled the sale of competing products that infringe a company's intellectual property. Thus, even if we have valid and nominally enforceable patents, these patents still may not provide protection against competing products or processes sufficient to achieve our business objectives.

The issuance of a patent is not conclusive as to its inventorship, scope, validity or enforceability, and our owned and licensed patents may be challenged in the courts or patent offices in the United States and abroad, including challenges through the U.S. Patent and Trademark Office post-grant review procedures. Such challenges may result in loss of exclusivity or in patent claims being narrowed, invalidated or held unenforceable, in whole or in part, which could limit our ability to stop others from using or commercializing similar or identical technology and products, or limit the duration of the patent protection of our technology and products. In addition, given the amount of time required for the development, testing and regulatory review of new product candidates, patents protecting such candidates might expire before or shortly after such candidates are commercialized.

If we are unable to protect the confidentiality of our trade secrets, the value of our technology could be materially adversely affected and our business would be harmed.

While we have obtained composition of matter patents with respect to our most advanced product candidates, our DCE Platform is not patented. In seeking to develop and maintain a competitive position through our DCE Platform and as to other aspects of our business, we rely on trade secrets, including unpatented know-how, technology and other proprietary information. We seek to protect these trade secrets, in part, by entering into non-disclosure and confidentiality agreements with parties who have access to them, such as our consultants, independent contractors, advisors, corporate collaborators, outside scientific collaborators, contract manufacturers, suppliers and other third parties. We also enter into confidentiality and invention or patent assignment agreements with employees and certain consultants. Any party with whom we have executed such an agreement may breach that agreement and disclose our proprietary information, including our trade secrets, and we may not be able to obtain adequate remedies for such breaches. Enforcing a claim that a party illegally disclosed or misappropriated a trade secret is difficult, expensive and time-consuming, and the outcome is unpredictable. In addition, if any of our trade secrets were to be lawfully obtained or independently developed by a competitor, we would have no right to prevent such third party, or those to whom they communicate such technology or information, from using that technology or information to compete with us. If any of our trade secrets were to be disclosed to or independently developed by a competitor, our business and competitive position could be harmed.

Third parties may sue us alleging that we are infringing their intellectual property rights, and such litigation could be costly and time consuming and could prevent or delay us from developing or commercializing our product candidates.

Our commercial success depends, in part, on our ability to develop, manufacture, market and sell our product candidates without infringing the intellectual property and other proprietary rights of third parties. Our CTP-543 compound is based, and potential future product candidates may be based, on products that are covered by issued patents or patent applications, the holders of which may attempt to assert claims against us. To date, we are not aware of any judicial decision holding that a patent that covers a non-deuterated compound should be construed to also cover deuterated analogs thereof, absent specific claims with respect to the deuterated analogs. However, any such judicial decision, or legal proceedings asserting such claims, could increase the likelihood of potential infringement claims being asserted against us. If any third party patents or patent applications are found to cover our product candidates or their methods of use, we may not be free to manufacture or market our product candidates as planned without obtaining a license, which may not be available on commercially reasonable terms, or at all.

For example, CTP-543 is a deuterium-modified version of ruxolitinib. Ruxolitinib is marketed in the U.S. by Incyte Corporation under the name Jakafi. Incyte has patents covering ruxolitinib that may be unexpired if and when we seek marketing approval for CTP-543. Incyte also has US patent 9,662,335 that broadly claims deuterated analogs of ruxolitinib. On June 27, 2017, we filed a Post Grant Review with the Patent Trial and Appeal Board, or PTAB, seeking to invalidate all claims of Incyte's U.S. Patent No. 9,662,335, which includes claims relating to deuterated ruxolitinib analogs. In January 2018, the PTAB rejected our petition to challenge the validity of the '335 patent. In addition, Columbia University is the assignee of a patent claiming the use of ruxolitinib for the treatment of hair loss disorders, including alopecia areata, which may be unexpired if and when we seek marketing approval for CTP-543. If we have to defend ourselves in a patent infringement suit, we may incur significant expenses in doing so. Such litigation could delay our ability to market, or prevent us from marketing, CTP-543.

There is a substantial amount of intellectual property litigation in the biotechnology and pharmaceutical industries, and we may become party to, or threatened with, litigation or other adversarial proceedings regarding intellectual property rights with respect to our products candidates, including interference proceedings before the U.S. Patent and Trademark Office. Third parties may assert infringement claims against us based on existing or future intellectual property rights. The outcome of intellectual property litigation is subject to uncertainties that cannot be adequately quantified in advance. The coverage of patents is subject to interpretation by the courts, and the interpretation is not always uniform. If we are sued for patent infringement, we would need to demonstrate that our product candidates, products or methods either do not infringe the relevant patent claims or that these patent claims are invalid or unenforceable, and we may not be able to do this. Proving invalidity is difficult. For example, in the United States, proving invalidity under most circumstances requires a showing of clear and convincing evidence to overcome the presumption of validity enjoyed by issued patents. We may also assert that a patent claim for a corresponding non-deuterated compound does not cover our product. Even if we are successful in these proceedings, we may incur substantial costs and the time and attention of our management and scientific personnel could be diverted in pursuing these proceedings, which could have a material adverse effect on us. In addition, we may not have sufficient resources to bring these actions to a successful conclusion.

If we are found to infringe a third party's intellectual property rights, we could be forced, including by court order, to cease developing, manufacturing or commercializing the infringing product candidate or product and could be required to pay potentially significant damages. Alternatively, we may be required to obtain a license from such third party in order to use the infringing technology and continue developing, manufacturing or marketing the infringing product candidate. However, we may not be able to obtain any required license on commercially reasonable terms, or at all. Even if we were able to obtain a license, it could be non-exclusive, thereby giving our competitors access to the same technologies licensed to us. In addition, we could be found liable for monetary damages, including treble damages and attorneys' fees if we are found to have willfully infringed a patent. A finding of infringement could prevent us from commercializing our product candidates or force us to cease some of our business operations, which could materially harm our business. Claims that we have misappropriated the confidential information or trade secrets of third parties could have a similar negative impact on our business.

We may become involved in lawsuits to protect or enforce our patents or other intellectual property, which could be expensive, time consuming and unsuccessful.

Competitors may infringe our patents, trademarks, copyrights or other intellectual property. To counter infringement or unauthorized use, we may be required to file infringement claims, which can be expensive and time consuming and divert the time and attention of our management and scientific personnel. In any patent infringement proceeding, there is a risk that a court will decide that a patent of ours is invalid or unenforceable, in whole or in part, and that we do not have the right to stop the other party from using the invention at issue. There is also a risk that, even if the validity and enforceability of such patents is upheld, the court will construe the patent's claims narrowly or decide that we do not have the right to stop the other party from using the invention at issue on the grounds that our patent claims do not cover the invention. An adverse outcome in a litigation or proceeding involving our patents could limit our ability to assert our patents against those parties or other competitors, and may curtail or preclude our ability to exclude third parties from making and selling similar or competitive products. Any of these occurrences could adversely affect our competitive business position, business prospects and financial condition.

Even if we establish infringement, the court may decide not to grant an injunction against further infringing activity and instead award only monetary damages, which may or may not be an adequate remedy. Furthermore, because of the substantial amount of discovery required in connection with intellectual property litigation, there is a risk that some of our confidential information could be compromised by disclosure during litigation. Moreover, there can be no assurance that we will have sufficient financial or other resources to file and pursue such infringement claims, which typically last for years before they are concluded. Even if we ultimately prevail in such claims, the monetary cost of such litigation and the diversion of the attention of our management and scientific personnel could outweigh any benefit we receive as a result of the proceedings.

RISKS RELATED TO REGULATORY APPROVAL AND OTHER LEGAL COMPLIANCE MATTERS

Even if we complete the necessary nonclinical studies and clinical trials the marketing approval process is expensive, time consuming and uncertain and we may not obtain approvals for the commercialization of some or all of our product candidates. As a result, we cannot predict when or if, and in which territories, we, or our collaborators, will obtain marketing approval to commercialize a product candidate.

The research, testing, manufacturing, labeling, approval, selling, marketing, promotion and distribution of drug products are subject to extensive regulation by the FDA and comparable foreign regulatory authorities, which regulations differ from

country to country. Failure to obtain marketing approval for a product candidate in a given territory will prevent us and our collaborators from commercializing the product candidate in that territory. Our product candidates are in various stages of development and are subject to the risks of failure inherent in drug development. We, and our collaborators, have not submitted an application for or received marketing approval for any of our product candidates in the United States or in any other jurisdiction. We have limited experience in filing and supporting the applications necessary to gain marketing approvals.

The process of obtaining marketing approvals, both in the United States and abroad, is lengthy, expensive and uncertain. It may take many years, if approval is obtained at all, and can vary substantially based upon a variety of factors, including the type, complexity and novelty of the product candidates involved. This is the case even though the deuterated compounds that we produce and seek to develop can have similar pharmacological properties as their corresponding non-deuterated compounds. Even if, as a result of any such similarities, we, or our collaborators, obtain clearance from the FDA and other regulatory authorities to follow expedited development programs for some deuterated compounds that reference and rely on previous findings for non-deuterated compounds, the review and approval of our product candidates may still take a substantial period of time.

In addition, changes in marketing approval policies during the development period, changes in or the enactment or promulgation of additional statutes, regulations or guidance or changes in regulatory review for each submitted product application, may cause delays in the approval or rejection of an application. Regulatory authorities have substantial discretion in the approval process and may refuse to accept any application or may decide that our data are insufficient for approval and require additional nonclinical, clinical or other studies. In addition, varying interpretations of the data obtained from nonclinical and clinical testing could delay, limit or prevent marketing approval of a product candidate. Any marketing approval we, or our collaborators, ultimately obtain may be limited or subject to restrictions or post-approval commitments that render the approved product not commercially viable.

Any delay in obtaining or failure to obtain required approvals could materially adversely affect our ability or that of our collaborators to generate revenue from the particular product candidate, which likely would result in significant harm to our financial position and adversely impact our stock price.

Failure to obtain marketing approval in international jurisdictions would prevent our product candidates from being marketed abroad.

In order to market and sell our products in the European Union and many other jurisdictions, we, or our collaborators, must obtain separate marketing approvals and comply with numerous and varying regulatory requirements. The approval procedure varies among countries and can involve additional testing. The time required to obtain approval may differ substantially from that required to obtain FDA approval. The marketing approval process outside the United States generally includes all of the risks associated with obtaining FDA approval. In addition, in many territories outside the United States, it is required that the product be approved for reimbursement before the product can be approved for sale in that territory. Our products may not receive commercially feasible prices in any given territory, or the price offered for our products in a territory may have an adverse effect on their prices in other territories if we were to accept. We, and our collaborators, may not obtain approvals from regulatory authorities outside the United States on a timely basis, if at all. Approval by the FDA does not ensure approval by regulatory authorities in other countries or jurisdictions, and approval by one regulatory authority outside the United States does not ensure approval by regulatory authorities in other countries or jurisdictions or by the FDA.

Even if we, or our collaborators, obtain marketing approvals for our product candidates, the terms of approvals and ongoing regulation of our products may limit how we, or they, manufacture and market our products, which could materially impair our ability to generate revenue.

Once marketing approval has been granted, an approved product and its manufacturer and marketer are subject to ongoing review and extensive regulation. We, and our collaborators, must therefore comply with requirements concerning advertising and promotion for any of our product candidates for which we or they obtain marketing approval. Promotional communications with respect to prescription drugs are subject to a variety of legal and regulatory restrictions and must be consistent with the information in the product's approved labeling. Thus, we and our collaborators will not be able to promote any products we develop for indications or uses for which they are not approved.

In addition, manufacturers of approved products and those manufacturers' facilities are required to comply with extensive FDA requirements, including ensuring that quality control and manufacturing procedures conform to cGMPs, which include requirements relating to quality control and quality assurance as well as the corresponding maintenance of records and documentation and reporting requirements. We, our contract manufacturers, our collaborators and their contract manufacturers could be subject to periodic unannounced inspections by the FDA to monitor and ensure compliance with cGMPs.

Accordingly, assuming we, or our collaborators, receive marketing approval for one or more of our product candidates, we, and our collaborators, and our and their contract manufacturers will continue to expend time, money and effort in all areas of regulatory compliance, including manufacturing, production, product surveillance and quality control.

If we, and our collaborators, are not able to comply with post-approval regulatory requirements, we, and our collaborators, could have the marketing approvals for our products withdrawn by regulatory authorities and our, or our collaborators', ability to market any future products could be limited, which could adversely affect our ability to achieve or sustain profitability. Further, the cost of compliance with post-approval regulations may have a negative effect on our operating results and financial condition.

Any of our product candidates for which we, or our collaborators, obtain marketing approval in the future could be subject to post-marketing restrictions or withdrawal from the market and we, or our collaborators, may be subject to substantial penalties if we, or they, fail to comply with regulatory requirements or if we, or they, experience unanticipated problems with our products following approval.

Any of our product candidates for which we, or our collaborators, obtain marketing approval in the future, as well as the manufacturing processes, post-approval studies and measures, labeling, advertising and promotional activities for such product, among other things, will be subject to continual requirements of and review by the FDA and other regulatory authorities. These requirements include submissions of safety and other post-marketing information and reports, registration and listing requirements, requirements relating to manufacturing, quality control, quality assurance and corresponding maintenance of records and documents, requirements regarding the distribution of samples to physicians and recordkeeping. Even if marketing approval of a product candidate is granted, the approval may be subject to limitations on the indicated uses for which the product may be marketed or to the conditions of approval, including the requirement to implement a Risk Evaluation and Mitigation Strategy, or REMS.

The FDA may also impose requirements for costly post-marketing studies or clinical trials and surveillance to monitor the safety or efficacy of a product. The FDA and other agencies, including the Department of Justice, closely regulate and monitor the post-approval marketing and promotion of products to ensure that they are manufactured, marketed and distributed only for the approved indications and in accordance with the provisions of the approved labeling. The FDA imposes stringent restrictions on manufacturers' communications regarding off-label use and if we, or our collaborators, do not market any of our product candidates for which we, or they, receive marketing approval for only their approved indications, we, or they, may be subject to warnings or enforcement action for off-label marketing. Violation of the FDCA and other statutes, including the False Claims Act, relating to the promotion and advertising of prescription drugs may lead to investigations or allegations of violations of federal and state health care fraud and abuse laws and state consumer protection laws.

In addition, later discovery of previously unknown adverse events or other problems with our products or their manufacturers or manufacturing processes, or failure to comply with regulatory requirements, may yield various results, including:

- restrictions on such products, manufacturers or manufacturing processes;
- restrictions on the indication, patient population, or other parameters for which the drug is approved;
- restrictions on the labeling or marketing of a product;
- restrictions on product distribution or use;
- requirements to conduct post-marketing studies or clinical trials;
- warning letters or untitled letters;
- withdrawal of the products from the market;
- refusal to approve pending applications or supplements to approved applications that we submit;
- recall of products;
- fines, restitution or disgorgement of profits or revenues;
- suspension or withdrawal of marketing approvals;
- refusal to permit the import or export of products;
- product seizure; or
- injunctions or the imposition of civil or criminal penalties.

Recently enacted and future legislation may increase the difficulty and cost for us and our collaborators to obtain marketing approval of and commercialize our product candidates and affect the prices we, or they, may obtain.

In the United States and some foreign jurisdictions, there have been a number of legislative and regulatory changes and proposed changes regarding the healthcare system that could prevent or delay marketing approval of our product candidates,

restrict or regulate post-approval activities and affect our ability, or the ability of our collaborators, to profitably sell any products for which we, or they, obtain marketing approval.

In the United States, the Medicare Prescription Drug, Improvement, and Modernization Act of 2003, or the MMA, changed the way Medicare covers and pays for pharmaceutical products. The legislation expanded Medicare coverage for drug purchases by the elderly and introduced a new reimbursement methodology based on average sales prices for physician administered drugs. In addition, this legislation provided authority for limiting the number of drugs that will be covered in any therapeutic class. Cost reduction initiatives and other provisions of this legislation could decrease the coverage and price that we receive for any approved products. While the MMA only addresses drug benefits for Medicare beneficiaries, private payors often follow Medicare coverage policy and payment limitations in setting their own reimbursement rates. Therefore, any reduction in reimbursement that results from the MMA may result in a similar reduction in payments from private payors.

In March 2010, President Obama signed into law the Patient Protection and Affordable Care Act, as amended by the Health Care and Education Affordability Reconciliation Act, or collectively the PPACA.

Among the provisions of the PPACA of potential importance to our product candidates are the following:

- an annual, non-deductible fee on any entity that manufactures or imports specified branded prescription drugs and biologic agents;
- an increase in the statutory minimum rebates a manufacturer must pay under the Medicaid Drug Rebate Program;
- expansion of healthcare fraud and abuse laws, including the False Claims Act and the Anti-Kickback Statute, new government investigative powers and enhanced penalties for noncompliance;
- a new Medicare Part D coverage gap discount program, in which manufacturers must agree to offer 50% point-of-sale discounts off negotiated prices;
- extension of manufacturers' Medicaid rebate liability;
- expansion of eligibility criteria for Medicaid programs;
- expansion of the entities eligible for discounts under the Public Health Service pharmaceutical pricing program new requirements to report financial arrangements with physicians and teaching hospitals;
- a new requirement to annually report drug samples that manufacturers and distributors provide to physicians; and
- a new Patient-Centered Outcomes Research Institute to oversee, identify priorities in, and conduct comparative clinical effectiveness research, along with funding for such research.

In addition, other legislative changes have been proposed and adopted since the PPACA was enacted. These changes included aggregate reductions to Medicare payments to providers of up to 2% per fiscal year, starting in 2013. In January 2013, President Obama signed into law the American Taxpayer Relief Act of 2012, which, among other things, reduced Medicare payments to several providers and increased the statute of limitations period for the government to recover overpayments to providers from three to five years. These new laws may result in additional reductions in Medicare and other healthcare funding.

Legislative and regulatory proposals have been made to expand post-approval requirements and restrict sales and promotional activities for pharmaceutical products. We cannot be sure whether additional legislative changes will be enacted, or whether the FDA regulations, guidance or interpretations will be changed, or what the impact of such changes on the marketing approvals of our product candidates, if any, may be. In addition, increased scrutiny by the United States Congress of the FDA's approval process may significantly delay or prevent marketing approval, as well as subject us and our collaborators to more stringent product labeling and post-marketing testing and other requirements.

Our future relationships with customers and third party payors will be subject to applicable anti-kickback, fraud and abuse and other healthcare laws and regulations, which could expose us to criminal sanctions, civil penalties, contractual damages, reputational harm and diminished profits and future earnings.

Healthcare providers, physicians and third party payors will play a primary role in the recommendation and prescription of any products for which we obtain marketing approval. Our future arrangements with third party payors and customers, if any, will subject us to broadly applicable fraud and abuse and other healthcare laws and regulations. The laws and regulations may constrain the business or financial arrangements and relationships through which we market, sell and distribute any products for which we obtain marketing approval. Restrictions under applicable federal and state healthcare laws and regulations in the U.S. include the following:

- *Anti-Kickback Statute*. The federal healthcare anti-kickback statute prohibits, among other things, persons from knowingly and willfully soliciting, offering, receiving or providing remuneration, directly or indirectly, in cash or in

kind, to induce or reward, or in return for, either the referral of an individual for, or the purchase, order or recommendation or arranging of, any good or service, for which payment may be made under a federal healthcare program such as Medicare and Medicaid;

- *False Claims Act*. The federal False Claims Act imposes criminal and civil penalties, including through civil whistleblower or *qui tam* actions, against individuals or entities for, among other things, knowingly presenting, or causing to be presented false or fraudulent claims for payment by a federal healthcare program or making a false statement or record material to payment of a false claim or avoiding, decreasing or concealing an obligation to pay money to the federal government, with potential liability including mandatory treble damages and significant per-claim penalties, currently set at $5,500 to $11,000 per false claim;
- *HIPAA*. The federal Health Insurance Portability and Accountability Act of 1996, or HIPAA, imposes criminal and civil liability for executing a scheme to defraud any healthcare benefit program or knowingly and willfully falsifying, concealing or covering up a material fact or making any materially false statement in connection with the delivery of or payment for healthcare benefits, items or services, and, as amended by the Health Information Technology for Economic and Clinical Health Act and its implementing regulations, also imposes obligations, including mandatory contractual terms and technical safeguards, with respect to maintaining the privacy, security and transmission of individually identifiable health information;
- *Transparency Requirements*. Federal laws require applicable manufacturers of covered drugs to report payments and other transfers of value to physicians, other healthcare providers and teaching hospitals, as well as ownership and investment interests held by physicians and other healthcare providers and their immediate family members;
- *Controlled Substances Act*. The CSA regulates the handling of controlled substances such as JZP-386; and
- *Analogous State and Foreign Laws*. Analogous state and foreign fraud and abuse laws and regulations, such as state anti-kickback and false claims laws can apply to sales or marketing arrangements and claims involving healthcare items or services. In addition, some state laws require pharmaceutical companies to comply with the pharmaceutical industry's voluntary compliance guidelines and the relevant compliance guidance promulgated by the federal government in addition to requiring drug manufacturers to report information related to payments to physicians and other health care providers or marketing expenditures and govern the privacy and security of health information in certain circumstances, many of which differ from each other in significant ways and often are not preempted by HIPAA, thus complicating compliance efforts.

Some state laws require pharmaceutical companies to comply with the pharmaceutical industry’s voluntary compliance guidelines and the relevant compliance guidance promulgated by the federal government and require drug manufacturers to report information related to payments and other transfers of value to physicians and other healthcare providers or marketing expenditures. State and foreign laws also govern the privacy and security of health information in some circumstances, many of which differ from each other in significant ways and often are not pre-empted by HIPAA, thus complicating compliance efforts.

Efforts to ensure that our business arrangements with third parties will comply with applicable healthcare laws and regulations will involve substantial costs. It is possible that governmental authorities will conclude that our business practices may not comply with current or future statutes, regulations or case law involving applicable fraud and abuse or other healthcare laws and regulations. If our operations are found to be in violation of any of these laws or any other governmental regulations that may apply to us, we may be subject to significant civil, criminal and administrative penalties, damages, fines, imprisonment, exclusion of products from government funded healthcare programs, such as Medicare and Medicaid, and the curtailment or restructuring of our operations. If any of the physicians or other healthcare providers or entities with whom we expect to do business is found to be not in compliance with applicable laws, they may be subject to criminal, civil or administrative sanctions, including exclusions from government funded healthcare programs.

If we fail to comply with environmental, health and safety laws and regulations, we could become subject to fines or penalties or incur costs that could have a material adverse effect on our business.

We are subject to numerous environmental, health and safety laws and regulations, including those governing laboratory procedures and the handling, use, storage, treatment and disposal of hazardous materials and wastes. From time to time, our operations may involve the use of hazardous materials, including chemicals and biological materials, and may also produce hazardous waste products. Even if we contract with third parties for the disposal of these materials and waste products, we cannot completely eliminate the risk of contamination or injury resulting from these materials. In the event of contamination or injury resulting from the use or disposal of our hazardous materials, we could be held liable for any resulting damages, and any liability could exceed our resources. We also could incur significant costs associated with civil or criminal fines and penalties for failure to comply with such laws and regulations.

We maintain workers’ compensation insurance to cover us for costs and expenses we may incur due to injuries to our employees resulting from the use of hazardous materials, but this insurance may not provide adequate coverage against

potential liabilities. We do not maintain insurance for environmental liability or toxic tort claims that may be asserted against us.

In addition, we may incur substantial costs in order to comply with current or future environmental, health and safety laws and regulations. Current or future environmental laws and regulations may impair our research, development or production efforts, which could adversely affect our business, financial condition, results of operations or prospects. In addition, failure to comply with these laws and regulations may result in substantial fines, penalties or other sanctions.

Governments outside the United States tend to impose strict price controls, which may adversely affect our revenues, if any.

In some countries, such as the countries of the European Union, the pricing of prescription pharmaceuticals is subject to governmental control. In these countries, pricing negotiations with governmental authorities can take considerable time after the receipt of marketing approval for a product. To obtain reimbursement or pricing approval in some countries, we, or our collaborators, may be required to conduct a clinical trial that compares the cost-effectiveness of our product to other available therapies. If reimbursement of our products is unavailable or limited in scope or amount, or if pricing is set at unsatisfactory levels, our business could be materially harmed.

RISKS RELATED TO EMPLOYEE MATTERS AND MANAGING GROWTH

Our future success depends on our ability to retain our Chief Executive Officer and other key executives and to attract, retain and motivate qualified personnel.

Our industry has experienced a high rate of turnover of management personnel in recent years. Our ability to compete in the highly competitive biotechnology and pharmaceuticals industries depends upon our ability to attract and retain highly qualified managerial, scientific and medical personnel. We are highly dependent on the pharmaceutical research and development and business development expertise of Roger D. Tung, our President and Chief Executive Officer, as well as the other principal members of our management, scientific and development team. Although we have formal employment agreements with our executive officers, these agreements do not prevent them from terminating their employment with us at any time. In addition, although we maintain a key-man insurance policy with respect to Dr. Tung, we do not carry key-man insurance on any of our other executive officers or employees and may not carry any key-man insurance in the future.

If we lose one or more of our executive officers, our ability to implement our business strategy successfully could be seriously harmed. Furthermore, replacing executive officers may be difficult and may take an extended period of time because of the limited number of individuals in our industry with the breadth of skills and experience required to develop, gain marketing approval of and commercialize products successfully. Competition to hire from this limited pool is intense, and we may be unable to hire, train, retain or motivate these additional key personnel on acceptable terms given the competition among numerous pharmaceutical and biotechnology companies for similar personnel. We also experience competition for the hiring of scientific and clinical personnel from universities and research institutions. In addition, we rely on consultants and advisors, including scientific and clinical advisors, to assist us in formulating our research and development and commercialization strategy. Our consultants and advisors may be employed by employers other than us and may have commitments under consulting or advisory contracts with other entities that may limit their availability to us. If we are unable to continue to attract and retain high quality personnel, our ability to develop and commercialize product candidates will be limited.

We expect to grow our organization and, as a result, we may encounter difficulties in managing our growth, which could disrupt our operations.

As our pipeline grows and matures, we expect to experience significant growth in the number of our employees and the scope of our operations, including in the areas of drug manufacturing, regulatory affairs and sales, clinical development, marketing and distribution. Our management may need to divert a disproportionate amount of its attention away from our day-to-day activities to devote time to managing these growth activities. To manage these growth activities, we must continue to implement and improve our managerial, operational and financial systems, expand our facilities and continue to recruit and train additional qualified personnel. Due to our limited financial resources and the limited experience of our management team in managing a company with such anticipated growth, we may not be able to effectively manage the expansion of our operations or recruit and train additional qualified personnel. Moreover, the expected expansion of our operations may lead to significant costs and may divert our business development resources. Any inability to manage growth could delay the execution of our business plans or disrupt our operations.

RISKS RELATED TO OUR COMMON STOCK

The price of our common stock may be volatile and fluctuate substantially, which could result in substantial losses for purchasers of our common stock.

The trading price of our comment stock has been, and may continue to be, volatile and could be subject to wide fluctuations in response to various factors, some of which are beyond our control. The stock market in general and the market for smaller pharmaceutical and biotechnology companies in particular have experienced extreme volatility that has often been unrelated to the operating performance of particular companies. The market price for our common stock may be influenced by many factors, including:

- the success or failure of existing or new competitive products or technologies;
- the timing, advancement of and results of nonclinical studies and clinical trials of any of our product candidates;
- commencement or termination of collaborations for our development programs;
- failure, delays, changes to or discontinuation of any of our development programs;
- regulatory or legal developments in the United States and other countries;
- regulatory actions relating to our product candidates;
- developments or disputes concerning patent applications, issued patents or other proprietary rights;
- the recruitment or departure of key personnel;
- disclosures by our collaborators relating to our product candidates or competitive programs;
- merger or acquisition activity of our collaborators;
- the level of expenses related to any of our product candidates or clinical development programs;
- the results of our efforts to develop additional product candidates or products;
- actual or anticipated changes in estimates as to financial results, development timelines or recommendations by securities analysts;
- announcement or expectation of additional financing efforts;
- receipt or expectation of receipt of revenues such as milestones, royalties, grants and license fees;
- sales of our common stock by us, our insiders or other stockholders;
- programmed trading based on technical stock chart or other inputs;
- portfolio restructuring by large shareholders;
- addition or removal of our stock from stock indices;
- variations in our financial results or those of companies that are perceived to be similar to us;
- changes in estimates or recommendations by securities analysts that cover our stock;
- actions by short-sellers or supporters of our stock, including social media postings or reports;
- changes in the structure of healthcare payment systems;
- market conditions in the pharmaceutical and biotechnology sectors;
- legalization or the anticipation of possible legalization of drug reimportation from other countries;
- actual or anticipated changes in FDA practices;
- general economic, industry and market conditions; and
- the other factors described in this “Risk Factors” section.

An active trading market for our common stock may not be sustained.

Although we have listed our common stock on The NASDAQ Global Market, an active trading market for our common stock may not be sustained. In the absence of an active trading market for our common stock, investors may not be able to sell their common stock at or above the price at which they acquired their shares or at the times that they would like to sell. An inactive trading market may also impair our ability to raise capital to continue to fund operations by selling shares and may impair our ability to acquire other companies or technologies by using our shares as consideration.

We have broad discretion in the use of our cash reserves and may not use them effectively.

Our management has broad discretion to use our cash reserves and could use our cash reserves in ways that do not improve our results of operations or enhance the value of our common stock. The failure by our management to apply these funds effectively could result in financial losses that could have a material adverse effect on our business, cause the price of our common stock to decline and delay the development of our product candidates. Pending their use, we may invest our cash reserves in a manner that does not produce income or that loses value.

We are an "emerging growth company," and the reduced disclosure requirements applicable to emerging growth companies may make our common stock less attractive to investors.

We are an "emerging growth company," as defined in the JOBS Act, and may remain an emerging growth company for up to five years from the date of our initial public offering. For so long as we remain an emerging growth company, we are permitted and plan to rely on exemptions from certain disclosure requirements that are applicable to other public companies that are not emerging growth companies. These exemptions include not being required to comply with the auditor attestation requirements of Section 404 of the Sarbanes-Oxley Act of 2002, or SOX Section 404, not being required to comply with any requirement that may be adopted by the Public Company Accounting Oversight Board regarding mandatory audit firm rotation or a supplement to the auditor's report providing additional information about the audit and the financial statements, reduced disclosure obligations regarding executive compensation and exemptions from the requirements of holding a nonbinding advisory vote on executive compensation and shareholder approval of any golden parachute payments not previously approved. We cannot predict whether investors will find our common stock less attractive if we rely on these exemptions. If some investors find our common stock less attractive as a result, there may be a less active trading market for our common stock and our stock price may be more volatile.

In addition, the JOBS Act provides that an emerging growth company can take advantage of an extended transition period for complying with new or revised accounting standards. This allows an emerging growth company to delay the adoption of certain accounting standards until those standards would otherwise apply to private companies. We have irrevocably elected not to avail ourselves of this exemption from new or revised accounting standards and, therefore, we are subject to the same new or revised accounting standards as other public companies that are not emerging growth companies.

We will continue to incur increased costs as a result of operating as a public company, and our management will be required to devote substantial time to new compliance initiatives and corporate governance practices.

As a public company, we are incurring and expect to incur additional significant legal, accounting and other expenses that we did not incur as a private company. We expect that these expenses will further increase after we are no longer an "emerging growth company." The Sarbanes-Oxley Act of 2002, or SOX, the Dodd-Frank Wall Street Reform and Consumer Protection Act, the listing requirements of The NASDAQ Global Market and other applicable securities rules and regulations impose various requirements on public companies, including establishment and maintenance of effective disclosure and financial controls and corporate governance practices. We expect that we will need to hire additional personnel to comply with the requirements of being a public company, and our management and other personnel will need to devote a substantial amount of time towards maintaining compliance with these requirements. These rules and regulations are often subject to varying interpretations, in many cases due to their lack of specificity, and, as a result, their application in practice may evolve over time as new guidance is provided by regulatory and governing bodies. This could result in continuing uncertainty regarding compliance matters and higher costs necessitated by ongoing revisions to disclosure and governance practices.

Pursuant to SOX Section 404 we are required to evaluate the effectiveness of our internal control over financial reporting as of the end of each fiscal year and to report on this evaluation in our Annual Report on Form 10-K for the year. However, while we remain an emerging growth company, we will not be required to include an attestation report on internal control over financial reporting issued by our independent registered public accounting firm. We will need to continue to dedicate internal resources, potentially engage outside consultants and adopt a detailed work plan to assess and document the adequacy of internal control over financial reporting, continue steps to improve control processes as appropriate, validate through testing that controls are functioning as documented and implement a continuous reporting and improvement process for internal control over financial reporting. Despite our efforts, there is a risk that we will not be able to conclude that our internal control over financial reporting is effective as required by SOX Section 404. If we identify one or more material weaknesses, it could result in an adverse reaction in the financial markets due to a loss of confidence in the reliability of our financial statements.

A significant portion of our total outstanding shares may be sold into the market in the near future, which could cause the market price of our common stock to decline significantly, even if our business is doing well.

Sales of a substantial number of shares of our common stock in the public market could occur at any time. These sales, or the perception in the market that the holders of a large number of shares of common stock intend to sell shares, could reduce the market price of our common stock.

In addition, as of February 26, 2018, there were 4,085,209 shares subject to outstanding options and restricted stock units under our equity compensation plans, all of which shares we have registered under the Securities Act on a registration statement on Form S-8. These shares will be able to be freely sold in the public market upon exercise, as permitted by any applicable vesting requirements, except to the extent they are held by our affiliates, in which case such shares will become eligible for sale in the

public market as permitted by Rule 144 under the Securities Act. Furthermore, as of February 26, 2018, there were 132,069 shares subject to an outstanding warrant to purchase common stock. These shares will become eligible for sale in the public market, to the extent such warrant is exercised, as permitted by Rule 144 under the Securities Act. Moreover, holders of a substantial portion of our outstanding common stock have rights, subject to conditions, to require us to file registration statements covering their shares or, along with the holder of our outstanding warrant to purchase common stock, to include their shares in registration statements that we may file for ourselves or other stockholders.

We do not anticipate paying any cash dividends on our capital stock in the foreseeable future, accordingly, stockholders must rely on capital appreciation, if any, for any return on their investment.

We have never declared or paid cash dividends on our capital stock. We currently plan to retain all of our future earnings, if any, to finance the operation, development and growth of our business. Furthermore, any future debt agreements may preclude us from paying dividends. As a result, capital appreciation, if any, of our common stock will be the sole source of gain for our stockholders for the foreseeable future.

Our executive officers, directors and principal stockholders, if they choose to act together, have the ability to substantially influence all matters submitted to stockholders for approval.

As of December 31, 2017, our executive officers and directors, combined with our stockholders who owned more than 5% of our outstanding common stock, and all affiliates, in the aggregate, beneficially owned shares representing approximately 38.5% of our capital stock. As a result, if these stockholders were to choose to act together, they would be able to substantially influence all matters submitted to our stockholders for approval, as well as our management and affairs. For example, these persons, if they choose to act together, would substantially influence the election of directors and approval of any merger, consolidation or sale of all or substantially all of our assets. This concentration of ownership control may:

- delay, defer or prevent a change in control;
- entrench our management or the board of directors; or
- impede a merger, consolidation, takeover or other business combination involving us that other stockholders may desire.

Future sales of a substantial number of our common shares by our principal stockholders could depress the trading price of our common stock.

If our principal stockholders sell substantial amounts of shares of our common stock in the public market or if the market anticipates that these sales could occur, the market price of shares of our common stock could decline. These sales may make it more difficult for us to sell equity or equity-related securities in the future at a time and price that we deem appropriate, or to use equity as consideration for future acquisitions.

Provisions in our corporate charter documents and under Delaware law could make an acquisition of us, which may be beneficial to our stockholders, more difficult and may prevent attempts by our stockholders to replace or remove our current management.

Provisions in our corporate charter and our bylaws may discourage, delay or prevent a merger, acquisition or other change in control of us that stockholders may consider favorable, including transactions in which our stockholders might otherwise receive a premium for their shares. These provisions could also limit the price that investors might be willing to pay in the future for shares of our common stock, thereby depressing the market price of our common stock. In addition, because our board of directors is responsible for appointing the members of our management team, these provisions may frustrate or prevent any attempts by our stockholders to replace or remove our current management by making it more difficult for stockholders to replace members of our board of directors. Among other things, these provisions:

- establish a classified board of directors such that all members of the board are not elected at one time;
- allow the authorized number of our directors to be changed only by resolution of our board of directors;
- limit the manner in which stockholders can remove directors from the board;
- establish advance notice requirements for nominations for election to the board of directors or for proposing matters that can be acted on at stockholder meetings;
- require that stockholder actions must be effected at a duly called stockholder meeting and prohibit actions by our stockholders by written consent;
- limit who may call a special meeting of stockholders;

- authorize our board of directors to issue preferred stock without stockholder approval, which could be used to institute a "poison pill" that would work to dilute the stock ownership of a potential hostile acquirer, effectively preventing acquisitions that have not been approved by our board of directors; and
- require the approval of the holders of at least 75% of the votes that all our stockholders would be entitled to cast to amend or repeal certain provisions of our charter or bylaws.

Moreover, because we are incorporated in Delaware, we are governed by the provisions of Section 203 of the Delaware General Corporation Law, which prohibits a person who owns in excess of 15% of our outstanding voting stock from merging or combining with us for a period of three years after the date of the transaction in which the person acquired in excess of 15% of our outstanding voting stock, unless the merger or combination is approved in a prescribed manner. This could discourage, delay or prevent someone from acquiring us or merging with us, whether or not it is desired by, or beneficial to, our stockholders.

If securities or industry analysts do not publish research or publish inaccurate or unfavorable research about our business, our share price and trading volume could decline.

The trading market for our common stock depends on the research and reports that securities or industry analysts publish about us or our business. We do not have any control over these analysts. There can be no assurance that analysts will cover us, or provide favorable coverage. If one or more analysts downgrade our stock or change their opinion of our stock, our share price may decline. In addition, if one or more analysts cease coverage of our Company or fail to regularly publish reports on us, we could lose visibility in the financial markets, which could cause our share price or trading volume to decline.

RISKS RELATED TO ASSET SALE

The asset purchase agreement exposes us to contingent liabilities that could have a material adverse effect on our financial condition.

We have agreed to indemnify Vertex for damages resulting from or arising out of any inaccuracy or breach of our representations, warranties or covenants in the asset purchase agreement, any and all of our liabilities not assumed by Vertex in the asset sale and for certain other matters. Significant indemnification claims by Vertex could have a material adverse effect on our financial condition. In the event that claims for indemnification exceed certain thresholds set forth in the asset purchase agreement, we will be obligated to indemnify Vertex for any damages or loss resulting from such breach for up to $16 million, or in some cases, the entire purchase price paid to us by Vertex, including any milestone payments. Any event that results in a right for Vertex to seek indemnity from us could result in a substantial payment from us to Vertex and could adversely affect our results of operations.

ITEM 1B. Unresolved Staff Comments

None

ITEM 2. Properties

We lease our principal facilities, which consist of approximately 50,000 square feet of office, research and laboratory space located at 99 Hayden Avenue, Lexington, Massachusetts. The leases covering this space expire on September 30, 2018.

In December 2017, we entered into an agreement to lease approximately 55,500 square feet of office and laboratory space in a new location at 65 Hayden Avenue, Lexington, Massachusetts. We expect to relocate offices in the third quarter of 2018. We believe that the new facilities are sufficient for our current needs for the foreseeable future.

ITEM 3. Legal Proceedings

We are not currently a party to any material legal proceedings.

ITEM 4. Mine Safety Disclosures

Not applicable.

Part II

ITEM 5. Market for Registrant's Common Equity, Related Stockholder Matters and Issuers Purchases of Equity Securities

MARKET INFORMATION

Our common stock has been publicly traded on the NASDAQ Global Market under the symbol "CNCE" since February 13, 2014. Prior to that time, there was no public market for our common stock. Set forth below is the quarterly information with respect to the high and low prices for our common stock for the most recent fiscal year.

	High	Low
Year Ended December 31, 2017		
First Quarter	$ 18.43	$ 8.85
Second Quarter	16.95	12.01
Third Quarter	16.10	13.28
Fourth Quarter	29.05	13.96
Year Ended December 31, 2016		
First Quarter	$ 19.69	$ 12.16
Second Quarter	15.53	9.80
Third Quarter	12.28	9.47
Fourth Quarter	10.53	7.11

HOLDERS

As of January 31, 2018, there were 17 holders of record of our common stock. This number does not include beneficial owners whose shares are held by nominees in street name.

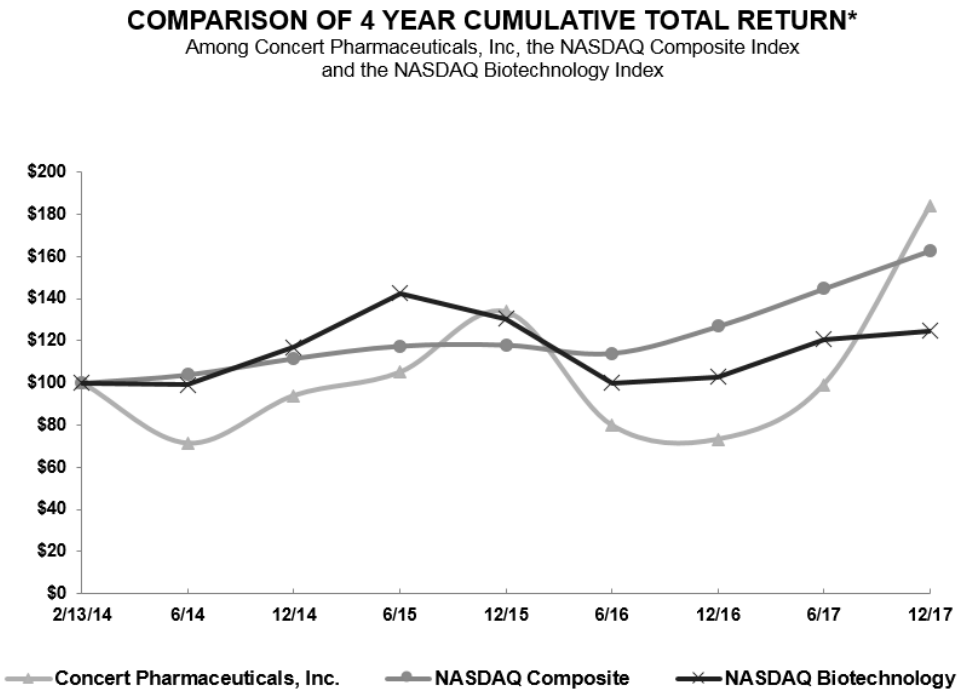
DIVIDENDS

We have never declared or paid any cash dividends on our capital stock. We currently intend to retain all of our future earnings, if any, to finance the growth and development of our business. We do not intend to pay any cash dividends to the holders of our common stock in the foreseeable future.

PERFORMANCE GRAPH

The following performance graph and related information shall not be deemed to be "soliciting material" or to be "filed" with the SEC for purposes of Section 18 of the Securities Exchange Act of 1934, as amended, or the Exchange Act, or otherwise subject to the liabilities under that Section, nor shall such information be incorporated by reference into any future filing under the Exchange Act or the Securities Act of 1933, as amended, or the Securities Act, except to the extent that we specifically incorporate it by reference into such filing.

The following graph compares the performance of our common stock to The NASDAQ Composite Index and to The NASDAQ Biotechnology Index from February 13, 2014 (the first date that shares of our common stock were publicly traded) through December 31, 2017. The comparison assumes $100 was invested after the market closed on February 13, 2014 in our common stock and in each of the foregoing indices, and it assumes reinvestment of dividends, if any. The stock price performance included in this graph is not necessarily indicative of future stock price performance.



*$100 invested on 2/13/14 in each of our common stock, the NASDAQ Composite Index and the NASDAQ Biotechnology Index, including reinvestment of dividends.

PURCHASE OF EQUITY SECURITIES

We did not purchase any of our registered equity securities during the period covered by this Annual Report on Form 10-K.

ITEM 6. Selected Financial Data

The following tables set forth our selected consolidated financial data and have been derived from our audited consolidated financial statements. You should read the following selected consolidated financial data together with our consolidated financial statements and accompanying notes appearing elsewhere in this Annual Report on Form 10-K and the "Management's Discussion and Analysis of Financial Condition and Results of Operations" section of this Annual Report on Form 10-K. Our historical results for any prior period are not necessarily indicative of the results that may be expected in any future period.

	Years ended December 31,				
(in thousands, except per share data)	**2017**	**2016**	**2015**	**2014**	**2013**
Results of Operations					
Total revenue	$ 143,891	$ 174	$ 66,729	$ 8,576	$ 25,408
Operating expenses:					
Research and development	$ 30,223	$ 36,983	$ 28,885	$ 27,474	$ 21,790
General and administrative	21,019	14,358	13,056	11,700	8,028
Total operating expenses	51,242	51,341	41,941	39,174	29,818
Income (Loss) from operations	92,649	(51,167)	24,788	(30,598)	(4,410)
Interest and other income (expense), net	2,690	447	(185)	(1,101)	(1,646)
(Benefit) Provision for income taxes	(300)	—	429	—	—
Net income (loss)	$ 95,639	$ (50,720)	$ 24,174	$ (31,699)	$ (6,056)
Net income (loss) applicable to common stockholders - basic	$ 95,195	$ (50,720)	$ 24,174	$ (31,754)	$ (6,452)
Net income (loss) applicable to common stockholders - diluted	$ 95,210	$ (50,720)	$ 24,174	$ (31,754)	$ (6,452)
Earnings Per Share					
Net income (loss) per share applicable to common stockholders - basic	$ 4.20	$ (2.28)	$ 1.14	$ (2.00)	$ (4.99)
Net income (loss) per share applicable to common stockholders - diluted	$ 4.06	$ (2.28)	$ 1.09	$ (2.00)	$ (4.99)
Weighted-average number of common shares used in net income (loss) per share applicable to common stockholders - basic	22,641	22,233	21,152	15,842	1,292
Weighted-average number of common shares used in net income (loss) per share applicable to common stockholders - diluted	23,442	22,233	22,267	15,842	1,292
Financial Condition					
Cash and cash equivalents	$ 27,665	$ 40,555	$ 92,510	$ 13,396	$ 9,638
Investments, available for sale	175,500	55,630	49,680	65,836	23,039
Working capital	199,289	92,159	137,481	63,102	18,128
Total assets	211,736	100,395	146,932	84,454	39,773
Deferred revenue	10,301	10,050	10,170	15,821	19,631
Loan payable, net of discount	—	—	—	7,101	14,919
Redeemable convertible preferred stock	—	—	—	—	112,244
Total stockholders' equity (deficit)	196,432	85,594	130,635	54,825	(112,104)

ITEM 7. Management's Discussion and Analysis of Financial Condition and Results of Operations

You should read the following discussion and analysis of our financial condition and results of operations together with our consolidated financial statements and the related notes appearing elsewhere in this Annual Report on Form 10-K. Some of the information contained in this discussion and analysis or set forth elsewhere in this report, including information with respect to our plans and strategy for our business and related financing, includes forward-looking statements that involve risks and uncertainties. You should read the "Risk Factors" section in Part 1—Item 1A. of this report for a discussion of important factors that could cause actual results to differ materially from the results described in or implied by the forward-looking statements contained in the following discussion and analysis.

OVERVIEW

We are a clinical stage biopharmaceutical company applying our extensive knowledge of deuterium chemistry to discover and develop novel small molecule drugs. Selective incorporation of deuterium into known molecules has the potential, on a case-by-case basis, to provide better pharmacokinetic or metabolic properties, thereby enhancing their clinical safety, tolerability or efficacy. Our approach typically starts with previously studied compounds, including approved drugs, which we believe may be improved with deuterium substitution. Our technology provides the opportunity to develop products that may compete with the non-deuterated drug in existing markets or to leverage its known activity to expand into new indications. Our deuterated chemical entity platform, or DCE Platform®, has broad potential across numerous therapeutic areas. As discussed in detail in Item 1 above, we have a robust pipeline of wholly owned and collaboration programs.

Since our inception in 2006, we have devoted substantially all of our resources to our research and development efforts, including activities to develop our deuterated chemical entity platform, or DCE Platform, and our core capabilities in deuterium chemistry, identify potential product candidates, undertake nonclinical studies and clinical trials, manufacture clinical trial material in compliance with current good manufacturing practices, provide general and administrative support for these operations and establish our intellectual property. We have generated an accumulated deficit of $76.2 million since inception through December 31, 2017 and will require substantial additional capital to fund our research and development. We do not have any products approved for sale and have not generated any revenue from product sales. We have funded our operations primarily through the public offering and private placement of our equity, debt financing and funding from collaborations, patent assignments, and other arrangements. In March 2015, we sold 3,300,000 shares of common stock at a price to the public of $15.15 per share, resulting in net proceeds to us of $46.7 million, after deducting the underwriting discounts, commissions and offering-related transaction costs.

On March 3, 2017, we entered into an Asset Purchase Agreement (the "Asset Purchase Agreement") with Vertex Pharmaceuticals, Inc., through Vertex Pharmaceuticals (Europe) Limited ("Vertex"), pursuant to which we agreed to sell and assign CTP-656, now known as VX-561, and other cystic fibrosis assets of the Company, for up to $250 million subject to the satisfaction of certain closing conditions. On July 25, 2017, the Asset Purchase Agreement closed and Vertex paid us $160 million in cash consideration, with $16 million to be held in escrow until January 2019. Additional information concerning the sale of CTP-656 is discussed further in Note 14 in the consolidated financial statements and Item 1A., each appearing elsewhere in this Annual Report on Form 10-K.

The Company's operating results may fluctuate significantly from year to year, depending on the timing and magnitude of cash payments received pursuant to collaboration and licensing arrangements and other agreements and the timing and magnitude of clinical trial and other development activities under our current development programs. We generated net income of $95.6 million for the year ended December 31, 2017, a net loss of $50.7 million for the year ended December 31, 2016, and net income of $24.2 million for the year ended December 31, 2015. The net income generated during the year ended December 31, 2017 was primarily the result of the Asset Purchase Agreement with Vertex, discussed above and in further detail in Note 14 in the consolidated financial statements appearing elsewhere in this Annual Report on Form 10-K. The net income generated during the year ended December 31, 2015 was primarily the result of a $50.2 million one-time payment from Auspex Pharmaceuticals, Inc., or Auspex, as discussed further in Note 13 in the consolidated financial statements.

We expect to continue to incur significant expenses and operating losses for at least the next several years. We expect our expenses will increase substantially in connection with our ongoing activities as we continue research and development efforts and develop and conduct additional nonclinical studies and clinical trials with respect to our product candidates.

We do not expect to generate revenue from product sales unless and until we, or our collaborators, obtain marketing approval for one or more of our product candidates, which we expect will take a number of years and is subject to significant uncertainty. If we obtain, or believe that we are likely to obtain, marketing approval for any product candidates for which we retain

commercialization rights, and intend to commercialize a product, we expect to incur significant commercialization expenses related to product sales, marketing, manufacturing and distribution. We expect to seek to fund our operations through a combination of equity offerings, debt financings, additional collaborations and licensing arrangements, and other sources for at least the next several years. However, we may be unable to raise additional funds or enter into such other arrangements when needed on favorable terms or at all. Our failure to raise capital or enter into such other arrangements as and when needed would force us to delay, limit, reduce or terminate our research and development programs and could have a material adverse effect on our financial condition and our ability to develop our products. We will need to generate significant revenues to achieve sustained profitability and we may never do so.

COLLABORATIONS

We have entered into a number of collaborations for the research, development and commercialization of deuterated compounds. To date, our collaborations have provided us with significant funding for both our specific development programs and our DCE Platform. Our collaborators also have applied their considerable scientific, development, regulatory and commercial capabilities to the development of our compounds. In addition, in some instances, where we develop and seek to collaborate with respect to deuterated analogs of marketed drugs or of drug candidates that are more advanced in clinical trials, our collaborators may be eligible for an expedited development or regulatory pathway by relying on previous clinical data regarding their corresponding non-deuterated compound. We believe that our collaborations have contributed to our ability to progress our product candidates and build our DCE Platform. We have established the following key collaborations, which are discussed further in Note 12 in the consolidated financial statements appearing elsewhere in this Annual Report on Form 10-K.

Avanir

In February 2012, we entered into a development and license agreement with Avanir under which we granted Avanir an exclusive worldwide license to develop, manufacture and commercialize deuterated dextromethorphan analogs, including d_6-dextromethorphan, or deudextromethorphan. Avanir is currently focused on developing AVP-786, which is a combination of deudextromethorphan and an ultra- low dose of quinidine, for the treatment of neurologic and psychiatric disorders. In January 2015, Avanir was acquired by Otsuka Pharmaceutical Co., Ltd. and it is now a wholly owned subsidiary of Otsuka America, Inc.

Under the agreement, we received a non-refundable upfront payment of $2.0 million and have received milestone payments of $6.0 million. We have the potential to earn up to $162.0 million in additional development, regulatory and sales-based milestone payments, of which $21.5 million in development and regulatory milestone payments are associated with the first indication. The next anticipated milestone payments that we may be entitled to receive are $5.0 million upon acceptance for filing of a NDA, $3.0 million upon acceptance for filing of a MAA, and $1.5 million upon acceptance for filing of a NDA by the Ministry of Health, Labour, and Welfare, or MHLW, related to AVP-786. Avanir also is required to pay us royalties at defined percentages ranging from the mid-single digits to low double digits below 20% on net sales of licensed products on a country-by-country basis.

Celgene

In April 2013, we entered into a master development and license agreement with Celgene, which is primarily focused on the research, development and commercialization of specified deuterated compounds targeting inflammation or cancer. While the collaboration has the potential to encompass multiple programs, it is initially focused on one program, CTP-730, which is deuterated apremilast.

We were responsible for conducting and funding research and early development activities for the CTP-730 program pursuant to mutually agreed upon development plans. This included the completion of single and multiple ascending dose Phase 1 clinical trials. Celgene is responsible for any development of CTP-730 beyond the completed Phase 1 clinical trials. If Celgene exercises its rights with respect to any additional program and pays us the applicable exercise fee, we are responsible for conducting research and development activities at our own expense pursuant to mutually agreed upon development plans until the completion of the first Phase 1 clinical trial, which will be defined in each development plan on a program-by-program basis. In addition, if Celgene exercises its rights with respect to the option program and pays us the applicable exercise fee, we are responsible for seeking to generate a deuterated compound for clinical development in the selected option program at our own expense.

Under the agreement, we received a non-refundable upfront payment of $35.0 million and received an $8.0 million development milestone in October 2015 upon completion of clinical evaluation for CTP-730. In addition, we have the potential to earn up to $312.5 million in additional development, regulatory and sales-based milestone payments with respect to

CTP-730. The next milestone that we may be entitled to receive is $15.0 million upon the first dosing in a Phase 3 clinical trial or, if earlier, acceptance for filing a new drug application, or NDA, related to CTP-730. If Celgene exercises its rights under any additional program, we may be eligible for milestone payments for each additional program. In addition, with respect to each program, Celgene is required to pay us royalties on worldwide net sales of each licensed product at defined percentages ranging from the mid-single digits to low double digits below 20%.

Jazz Pharmaceuticals

In February 2013, we entered into a development and license agreement with Jazz Pharmaceuticals to research, develop and commercialize products containing a deuterated sodium oxybate analog, or D-SXB. Jazz Pharmaceuticals is initially focused on developing one analog, designated as JZP-386 for the treatment of narcolepsy. Under the terms of the agreement, we granted Jazz Pharmaceuticals an exclusive, worldwide, royalty-bearing license under intellectual property controlled by us to develop, manufacture and commercialize D-SXB products including, but not limited to, JZP-386.

We, together with Jazz Pharmaceuticals, have conducted certain development activities for Phase 1 clinical trials with respect to JZP-386 pursuant to an agreed upon development plan. We were responsible under the development plan for conducting the Phase 1 clinical trials with respect to JZP-386. Thereafter, our obligations to conduct further development activities are subject to mutual agreement. Jazz Pharmaceuticals has assumed all manufacturing and development responsibilities relating to JZP-386.

Under the agreement, we received a non-refundable upfront payment of $4.0 million and are eligible to earn an aggregate of up to $113.0 million in development, regulatory and sales-based milestone payments. The next milestone payment that we may be entitled to receive is $4.0 million related to initiation of the first Phase 2 clinical trial of JZP-386. In addition, Jazz Pharmaceuticals is required to pay us royalties at defined percentages ranging from the mid-single digits to low double digits below 20% on worldwide net sales of licensed products.

ASSET PURCHASE AGREEMENT

On March 3, 2017, we entered into an Asset Purchase Agreement with Vertex pursuant to which we sold and assigned CTP-656 and other cystic fibrosis assets of the Company to Vertex. On July 25, 2017, the transaction contemplated by the Asset Purchase Agreement closed, and Vertex paid us $160 million in cash consideration with $16 million to be held in escrow, as described in Note 14 in the consolidated financial statements appearing elsewhere in this Annual Report on Form 10-K.

Additionally, upon the achievement of certain milestone events, Vertex has agreed to pay us an aggregate of up to $90 million. Of this amount, $50 million will become payable to us upon receipt of FDA marketing approval for a combination treatment regimen containing CTP-656, now known as VX-561, for patients with cystic fibrosis, and $40 million will become payable to us upon completion of a pricing and reimbursement agreement in the first of the United Kingdom, Germany or France with respect to a combination treatment regimen containing CTP-656 for patients with cystic fibrosis.

PATENT ASSIGNMENT AGREEMENT

In September 2011, we entered into a patent assignment agreement with Auspex Pharmaceuticals, Inc., or Auspex, pursuant to which we assigned to Auspex a U.S. patent application relating to deuterated pirfenidone analogs as described in Note 13 in the consolidated financial statements appearing elsewhere in this Annual Report on Form 10-K. Among other things, the patent assignment agreement provides that if Auspex is acquired in a change in control transaction at any time while it, or any of its affiliates, own certain patents or patent applications related to deuterated pirfenidone, we will receive within a specified period following the closing of the transaction 1.44% of any proceeds payable as consideration for the change in control transaction, including any amounts paid to stockholders and certain equity holders of Auspex. Any such change in control payment to us is credited to Auspex as a deduction against certain future payments that may become due under the agreement, such that Auspex will not be required to make further payments to us until the aggregate amount of such payments otherwise due exceeds the amount of the change in control payment.

Pursuant to the agreement, we became eligible to receive a one-time payment of $50.2 million, which was received in June 2015, due to Teva Pharmaceutical Industries Ltd.'s acquisition of Auspex in May 2015.

FINANCIAL OPERATIONS OVERVIEW

Revenue

We have not generated any revenue from the sales of products. All of our revenue to date has been generated through collaboration, license and research arrangements with collaborators and nonprofit organizations for the development and commercialization of product candidates, a patent assignment agreement, and an asset sale.

The terms of these agreements may include one or more of the following types of payments: non-refundable license fees, payments for research and development activities, payments based upon the achievement of specified milestones, payment of license exercise or option fees relating to product candidates and royalties on any net product sales. To date, we have received non-refundable upfront payments, several milestone payments, payments for research and development services provided to our collaborators, a change in control payment pursuant to a patent assignment agreement, and a payment for the sale of an asset. However, we have not yet earned any license exercise or option fees, sales-based milestone payments or royalty revenue as a result of product sales.

In the future, we will seek to generate revenue from a combination of product sales and milestone payments and royalties on product sales in connection with our current collaborations with Avanir, Celgene, and Jazz Pharmaceuticals, our asset sale with Vertex, or other collaborations we may enter into.

Research and development expenses

Research and development expenses consist primarily of costs incurred for the development of our product candidates, which include:

- employee-related expenses, including salary, benefits, travel and stock-based compensation expense;
- expenses incurred under agreements with contract research organizations and investigative sites that conduct our clinical trials;
- the cost of acquiring, developing and manufacturing clinical trial materials;
- facilities, depreciation and other expenses, which include direct and allocated expenses for rent and maintenance of facilities, insurance and other supplies;
- platform-related lab expenses, which includes costs related to synthesis, analysis and *in vitro* and *in vivo* characterization of deuterated compounds to support the selection and progression of potential product candidates;
- expenses related to consultants and advisors; and
- costs associated with nonclinical activities and regulatory operations.

Research and development costs are expensed as incurred. Costs for certain development activities are recognized based on an evaluation of the progress to completion of specific tasks using information and data provided to us by our vendors and our clinical sites.

A significant portion of our research and development costs have been external costs, which we track on a program-by-program basis. These external costs include fees paid to investigators, consultants, central laboratories and contract research organizations in connection with our clinical trials, and costs related to acquiring and manufacturing clinical trial materials. Our internal research and development costs are primarily personnel-related costs, depreciation and other indirect costs. We do not track our internal research and development expenses on a program-by-program basis as they are deployed across multiple projects under development.

The successful development of any of our product candidates is highly uncertain. As such, at this time, we cannot reasonably predict with certainty the duration and completion costs of the current or future clinical trials of any of our product candidates or if, when, or to what extent we will generate revenues from the commercialization and sale of any of our product candidates that obtain marketing approval. We may never succeed in achieving regulatory approval for any of our product candidates. The duration, costs, and timing of clinical trials and development of our product candidates will depend on a variety of factors, including:

- the scope and rate of progress of our ongoing as well as any additional clinical trials and other research and development activities;
- conduct of and results from ongoing as well as any additional clinical trials and research and development activities;
- significant and changing government regulation;
- the terms and timing and receipt of any regulatory approvals;
- the performance of our collaborators;

- our ability to manufacture any of our product candidates that we are developing or may develop in the future; and
- the expense and success of filing, prosecuting, defending and enforcing any patent claims and other intellectual property rights, including potential claims that we infringe other parties' intellectual property.

A change in the outcome of any of these variables with respect to the development of a product candidate could mean a significant change in the costs and timing associated with the development of that product candidate. For example, if the FDA or another regulatory authority were to require us to conduct clinical trials or other research and development activities beyond those that we currently anticipate will be required for the completion of clinical development of a product candidate, or if we experience significant delays in enrollment in any of our clinical trials, we could be required to expend significant additional financial resources and time on the completion of clinical development.

Research and development activities are central to our business model. Product candidates in later stages of clinical development generally have higher development costs than those in earlier stages of clinical development, due to the increased size and duration of later-stage clinical trials and the manufacturing that is typically required for those later-stage clinical trials. We expect research and development costs to increase significantly for the foreseeable future as our product candidate development programs progress but we do not believe that it is possible at this time to accurately project total program-specific expenses through commercialization. There are numerous factors associated with the successful commercialization of any of our product candidates, including future trial design and various regulatory requirements, many of which cannot be determined with accuracy at this time based on our stage of development. Additionally, future commercial and regulatory factors beyond our control will impact our clinical development programs and plans.

General and administrative expenses

General and administrative expenses consist primarily of salaries and related costs for personnel, including stock-based compensation and travel expenses for our employees in executive, operational, finance, legal, business development and human resource functions. Other general and administrative expenses include facility-related costs, depreciation and other expenses not allocated to research and development expense and professional fees for directors, accounting and legal services and expenses associated with obtaining and maintaining patents. In 2017, we also incurred expenses responding to the Federal Trade Commission's requests for information and documentation in connection with their review of the transaction contemplated by the Vertex Asset Purchase Agreement as well as intellectual property matters related to CTP-543.

We anticipate that our general and administrative expenses will increase in the future as our pipeline grows and matures. Additionally, if and when we believe a regulatory approval of the first product candidate that we intend to commercialize on our own appears likely, we anticipate an increase in payroll and related expenses as a result of our preparation for commercial operations, especially as it relates to the sales, marketing and distribution of our product candidates.

Investment income

Investment income consists of interest income earned on cash equivalents and investments. The amount of investment income earned in any particular period may vary primarily as a result of the amount of cash equivalents and investments held during the period and the types of securities included in our portfolio during the period. Our current investment policy is to maintain a diversified investment portfolio of U.S. government-backed securities and money market mutual funds consisting of U.S. government-backed securities.

Interest and other expense

Interest and other expense consists primarily of interest expense on amounts outstanding under our prior debt facilities with Hercules Technology Growth Capital, Inc., or Hercules, and amortization of debt discount. On October 1, 2015, we made a final payment to Hercules, thereby fulfilling all obligations under our 2011 debt facility. On June 8, 2017, we entered into a loan agreement with Hercules in the amount of $30.0 million which we then paid off on September 7, 2017 in the amount of $30.8 million pursuant to a payoff letter. All our outstanding indebtedness and obligations owed to Hercules were paid in full, and the loan agreement was terminated. Additional information regarding the debt facility is available in Note 15 of the consolidated financial statements appearing elsewhere in this Annual Report on Form 10-K.

Income Taxes

We record a provision or benefit for income taxes on pre-tax income or loss based on our estimated effective tax rate for the year. We recorded $0.3 million in income tax benefit and $0.4 million in income tax expense during the years ended December 31, 2017 and 2015, respectively. No tax provision was recorded during the year ended December 31, 2016 due to the net loss

generated. The tax benefit realized in fiscal year 2017 is the result of the enactment of the Tax Cuts and Jobs Act (TCJA) that changed corporate alternative minimum tax ("AMT"), resulting in a an expected refund for AMT paid in fiscal year 2015. As of December 31, 2015, the U.S. federal tax code limited the use of net operating loss carryforwards to ninety percent of AMT income resulting in an effective tax rate of approximately two percent.

Loss on extinguishment of debt

In connection with the loan agreement entered into with Hercules on June 8, 2017 and subsequently remitted on September 7, 2017, we recognized a loss on the extinguishment of debt for $1.4 million. Additional information regarding the debt facility is available in Note 15 of the consolidated financial statements appearing elsewhere in this Annual Report on Form 10-K.

CRITICAL ACCOUNTING POLICIES AND SIGNIFICANT JUDGMENTS AND ESTIMATES

Our management's discussion and analysis of our financial condition and results of operations are based on our consolidated financial statements, which have been prepared in accordance with U.S. generally accepted accounting principles. The preparation of these financial statements requires us to make judgments and estimates that affect the reported amounts of assets, liabilities, revenues, and expenses and the disclosure of contingent assets and liabilities in our financial statements. We base our estimates on historical experience, known trends and events, and various other factors that are believed to be reasonable under the circumstances. Actual results may differ from these estimates. On an ongoing basis, we evaluate our judgments and estimates in light of changes in circumstances, facts and experience. The effects of material revisions in estimates, if any, will be reflected in the consolidated financial statements prospectively from the date of change in estimates.

While our significant accounting policies are described in more detail in the notes to our consolidated financial statements appearing elsewhere in this Annual Report on Form 10-K, we believe the following accounting policies used in the preparation of our financial statements require the most significant judgments and estimates:

- revenue recognition;
- accrued research and development expense;
- stock-based compensation; and
- income taxes.

Revenue recognition

We have primarily generated revenue through arrangements with collaborators for the development and commercialization of product candidates. In fiscal year 2017, we generated revenue through an Asset Purchase Agreement with Vertex, which was treated consistently with our other multiple-element arrangements.

Collaboration revenue

The terms of our collaboration and license agreements have typically contained multiple elements, or deliverables, which have included licenses, or options to obtain licenses, to product candidates, referred to as exclusive licenses, as well as research and development activities to be performed by us on behalf of the collaborator related to the licensed product candidates. Payments that we may receive under these agreements include non-refundable upfront license fees, payment for research and development activities, payments based upon achievement of specified milestones, payment upon exercise of license rights or options to license product candidates and royalties on any resulting product sales.

Multiple-Element Arrangements. Our collaborations primarily represent multiple-element arrangements. We analyze multiple-element arrangements based on the guidance in Financial Accounting Standards Board, or FASB, Accounting Standards Codification, or ASC, Topic 605-25, *Revenue Recognition-Multiple-Element Arrangements*, or ASC 605-25. Pursuant to the guidance in ASC 605-25, we evaluate multiple-element arrangements to determine the deliverables included in the arrangement and whether the individual deliverables represent separate units of accounting or whether they must be accounted for as a combined unit of accounting. This evaluation involves subjective determinations and requires us to make judgments about the individual deliverables and whether such deliverables are separable from the other aspects of the contractual relationship. Deliverables are considered separate units of accounting provided that: (1) the delivered item(s) has value to the customer on a standalone basis and (2) if the arrangement includes a general right of return relative to the delivered item(s), delivery or performance of the undelivered item(s) is considered probable and substantially in our control. In assessing whether a delivered item(s) has standalone value, we consider whether the collaboration partner can use the delivered item(s) for its intended purpose without the receipt of the remaining element(s), whether the value of the deliverable is dependent on the undelivered

item(s) and whether there are other vendors that can provide the undelivered element(s). In making these assessments, we consider factors such as the research, manufacturing and commercialization capabilities of the collaboration partner and the availability of the associated expertise in the general marketplace. The terms of our collaboration and licensing arrangements do not contain general rights of return that would preclude recognition of revenue.

Arrangement consideration that is fixed or determinable is allocated among the separate units of accounting using the relative selling price method. We determine the selling price of a unit of accounting following the hierarchy of evidence prescribed by ASC 605-25. Accordingly, we determine the estimated selling price for units of accounting within each arrangement using vendor-specific objective evidence of selling price, if available, third-party evidence of selling price if vendor-specific objective evidence is not available, or best estimate of selling price if neither vendor-specific objective evidence nor third-party evidence is available. We typically use best estimate of selling price to estimate the selling price for exclusive licenses and research and development services, since we generally do not have vendor-specific objective evidence or third-party evidence of selling price for these items. Determining the best estimate of selling price for a unit of accounting requires significant judgment. In developing the best estimate of selling price for a unit of accounting, we consider applicable market conditions and relevant entity-specific factors, including factors that were contemplated in negotiating the agreement with the customer and estimated costs. We validate the best estimate of selling price for units of accounting by evaluating whether changes in the key assumptions used to determine the best estimate of selling price will have a significant effect on the allocation of arrangement consideration between multiple units of accounting.

Our multiple-element revenue arrangements may include the following:

- *Option Arrangements*. An option to obtain an exclusive license is considered substantive if, at the inception of the arrangement, we are at risk as to whether the collaboration partner will choose to exercise the option. Factors that we consider in evaluating whether an option is substantive include the overall objective of the arrangement, the benefit the collaborator might obtain from the arrangement without exercising the option, the cost to exercise the option and the likelihood that the option will be exercised. For arrangements under which an option is considered substantive, we do not consider the item underlying the option to be a deliverable at the inception of the arrangement and the associated option fees are not included in allocable arrangement consideration, assuming the option is not priced at a significant and incremental discount. Conversely, for arrangements under which an option is not considered substantive, we would consider the item underlying the option to be a deliverable at the inception of the arrangement and a corresponding amount would be included in the allocable arrangement consideration. A significant and incremental discount included in an otherwise substantive option is considered to be a separate deliverable at the inception of the arrangement.

- *Exclusive Licenses*. We recognize arrangement consideration allocated to each unit of accounting when all of the revenue recognition criteria included in ASC Topic 605 *Revenue Recognition* are satisfied for that particular unit of accounting. We will recognize as revenue arrangement consideration attributed to exclusive licenses that have standalone value from the other deliverables to be provided in an arrangement upon delivery. We will recognize as revenue arrangement consideration attributed to exclusive licenses that do not have standalone value from the other deliverables to be provided in an arrangement over our estimated performance period as the arrangement would be accounted for as a single, combined unit of accounting.
- *Research and Development Services*. We recognize revenue associated with research and development services over the associated period of performance. If there is no discernible pattern of performance and/or objectively measurable performance measures do not exist, then we recognize revenue on a straight-line basis over the period we are expected to complete our performance obligations. Conversely, if the pattern of performance in which the service is provided to the customer can be determined and objectively measurable performance measures exist, then we recognize revenue under the arrangement using the proportional performance method, which requires us to make certain estimates when determining the proportion of services rendered in relation to the total services expected to be rendered.

Milestone Revenue. At the inception of an arrangement that includes milestone payments, we evaluate whether each milestone is substantive and at risk to both parties on the basis of the contingent nature of the milestone. This evaluation includes an assessment of whether:

- the consideration is commensurate with either our performance to achieve the milestone or the enhancement of the value of the delivered item(s) as a result of a specific outcome resulting from our performance to achieve the milestone;
- the consideration relates solely to past performance; and
- the consideration is reasonable relative to all of the deliverables and payment terms within the arrangement.

We evaluate factors such as the scientific, clinical, regulatory, commercial and other risks that must be overcome to achieve the respective milestone and the level of effort and investment required to achieve the respective milestone in making this assessment. There is considerable judgment involved in determining whether a milestone satisfies all of the criteria required to conclude that a milestone is substantive. We have concluded that all of the development and regulatory milestones included in our current collaboration arrangements are substantive. Accordingly, in accordance with FASB ASC Topic 605-28, *Revenue Recognition-Milestone Method*, revenue from development and regulatory milestone payments will be recognized in their entirety upon successful accomplishment of the milestone, assuming all other revenue recognition criteria are met. Milestones that are not considered substantive would be recognized as revenue over the remaining period of performance, assuming all other revenue recognition criteria are met. Revenue from sales-based milestone payments will be accounted for as royalties and recognized as revenue upon achievement of the milestone, assuming all other revenue recognition criteria are met.

Royalty Revenue. We will recognize royalty revenue in the period of sale of the related product(s), based on the underlying contract terms, provided that the reported sales are reliably measurable and we have no remaining performance obligations, assuming all other revenue recognition criteria are met.

Adoption of ASU 2014-09 (Topic 606)

In May 2014, the Financial Accounting Standard Board, or FASB, issued Accounting Standards Update, or ASU, No. 2014-09, Revenue from Contracts with Customers (Topic 606), or ASU 2014-09, which stipulates that an entity should recognize revenue to depict the transfer of promised goods or services to customers in an amount that reflects the consideration to which the entity expects to be entitled in exchange for those goods or services. This update will be effective for us beginning in the first quarter of fiscal 2018. For additional details regarding our adoption of this authoritative guidance, see Note 2 in the accompanying consolidated financial statements appearing elsewhere in this Annual Report on Form 10-K.

Accrued research and development expenses

As part of the process of preparing our financial statements, we are required to estimate our accrued expenses as of each balance sheet date. This process involves reviewing open contracts and purchase orders, communicating with our personnel to identify services that have been performed on our behalf and estimating the level of service performed and the associated cost incurred for the service when we have not yet been invoiced or otherwise notified of the actual cost. The majority of our service providers invoice us monthly in arrears for services performed or when contractual milestones are met. We make estimates of our accrued expenses as of each balance sheet date in our financial statements based on facts and circumstances known to us at that time. We periodically confirm the accuracy of our estimates with the service providers and make adjustments if necessary. Examples of estimated accrued research and development expenses include fees paid to:

- contract research organizations in connection with clinical trials;
- investigative sites in connection with clinical trials;
- vendors in connection with nonclinical development activities; and
- vendors related to product manufacturing, development and distribution of clinical supplies.

We generally accrue expenses related to research and development activities based on the services received and efforts expended pursuant to contracts with multiple contract research organizations that conduct and manage clinical trials on our behalf as well as other vendors that provide research and development services. The financial terms of these agreements are subject to negotiation, vary from contract to contract and may result in uneven payment flows. There may be instances in which payments made to our vendors will exceed the level of services provided and result in a prepayment of the clinical expense. Payments under some of these contracts depend on factors such as the successful enrollment of subjects and the completion of clinical trial milestones. In accruing service fees, we estimate the time period over which services will be performed and the level of effort to be expended in each period. If the actual timing of the performance of services or the level of effort varies from our estimate, we adjust the accrual or prepaid accordingly. Non-refundable advance payments for goods and services that will be used in future research and development activities are expensed when the activity has been performed or when the goods have been received rather than when the payment is made.

Although we do not expect our estimates to be materially different from amounts actually incurred, if our estimates of the status and timing of services performed differ from the actual status and timing of services performed, we may report amounts that are too high or too low in any particular period. To date, there have been no material differences from our estimates to the amounts actually incurred.

Stock-Based Compensation

Since our inception in May 2006, we have applied the fair value recognition provisions of Financial Accounting Standards Board Accounting Standards Codification Topic 718, *Compensation-Stock Compensation*, which we refer to as ASC 718, to account for stock-based compensation arrangements with our employees. Stock-based compensation arrangements with non-employees has not been significant. We use the Black-Scholes-Merton option pricing model for determining the estimated fair value for stock-based awards on the date of grant, which requires the use of subjective and complex assumptions to determine the fair value of stock-based awards, including the fair value of the common stock underlying stock-based compensation awards (for periods prior to our IPO), the award's expected term and the price volatility of the underlying stock. We recognize the value of the portion of the awards that is ultimately expected to vest as expense over the requisite vesting periods on a ratable basis for the entire award. Our awards granted to employees generally have a ten year term and typically vest over a four year period.

Expected volatility was estimated using a weighted-average of our historical volatility of our common stock and the historical volatility of the common stock of a representative group of publicly traded companies from the biopharmaceutical industry with similar characteristics as us, including stage of product development and therapeutic focus. We will continue to apply this process until a sufficient amount of historical information regarding the volatility of our own stock price becomes available.

The expected term of awards represents the period of time that the awards are expected to be outstanding. We use the simplified method as prescribed by the Securities and Exchange Commission Staff Accounting Bulletin No. 107, *Share-Based Payment* as we do not have sufficient historical exercise data to provide a reasonable basis upon which to estimate the expected term of stock options granted to employees.

We utilize a dividend yield of zero based on the fact that we have never paid cash dividends and have no current intention of paying cash dividends. The risk-free interest rate was estimated using an average of treasury bill interest rates over a period commensurate with the expected term of the option at the time of grant. Forfeitures are estimated at the time of grant and revised, if necessary, in subsequent periods if actual forfeitures differ from those estimates.

We have computed the fair value of employee stock options at the date of grant using the following weighted-average assumptions:

	Year ended December 31,		
	2017	2016	2015
Expected volatility	78.15%	78.29%	73.38%
Expected term	6.0 years	6.0 years	6.0 years
Risk-free interest rate	2.07%	1.36%	1.69%
Expected dividend yield	—%	—%	—%

We granted restricted stock units and performance stock units to our employees and members of our senior management team. We recognize compensation expense for restricted stock units ratably over the required service period. For awards with performance conditions in which the award does not vest unless the performance condition is met, we recognize expense only if we estimate that achievement of the performance condition is probable. If we conclude that vesting is probable, we recognize expense from the date that we reach this conclusion through the estimated vesting date.

Income Taxes

We record income taxes under the liability method. Deferred tax assets and liabilities reflect our estimation of the future tax consequences of temporary differences between the carrying amounts of assets and liabilities for book and tax purposes. We determine deferred income taxes based on the differences in accounting methods and timing between financial statement and income tax reporting. Accordingly, we determine the deferred tax asset or liability for each temporary difference based on the enacted tax rates expected to be in effect when we realize the underlying items of income and expense. We consider many factors when assessing the likelihood of future realization of our deferred tax assets, including our recent earnings experience, expectations of future taxable income, and the carryforward periods available to us for tax reporting purposes, as well as other relevant factors. We establish a valuation allowance to reduce deferred tax assets to the amount we believe is more likely than not to be realized. Due to inherent complexities arising from the nature of our business, future changes in income tax law, or variances between our actual and anticipated operating results, we make certain judgments and estimates, including our ability

to realize our deferred tax assets and our ability to use our operating loss carryforwards and tax credits to offset taxable income. Therefore, actual income taxes could materially vary from these estimates.

Our ability to use our operating loss carryforwards and tax credits to offset taxable income is subject to restrictions under Sections 382 and 383 of the United States Internal Revenue Code (the "Internal Revenue Code"). Net operating loss and tax credit carryforwards may become subject to an annual limitation in the event of certain cumulative changes in the ownership interest of significant shareholders over a three-year period in excess of 50 percent, as defined under Sections 382 and 383 of the Internal Revenue Code. Such changes would limit our use of operating loss carryforwards and tax credits. In such a situation, we may be required to pay income taxes, even though significant operating loss carryforwards and tax credits exist. In determining the tax provisions for fiscal years 2017 and 2015, we assessed our ability to use our net operating loss carryforwards in accordance with Sections 382 and 383 of the Internal Revenue Code, discussed further in Note 10 in the accompanying notes to the consolidated financial statements appearing elsewhere in this Annual Report on Form 10-K.

On December 22, 2017, the President of the United States signed into law the Tax Cuts and Jobs Act ("TCJA"). This legislation makes broad and complex changes to the U.S. tax code, including, but not limited to, (i) reducing the U.S. federal statutory tax rate from 35% to 21%; (ii) eliminating the corporate alternative minimum tax (AMT) and changing how existing AMT credits can be realized; (iii) modifying the officer's compensation limitation, and (iv) changing rules related to uses and limitations of net operating loss carryforwards created in tax years beginning after December 31, 2017.

As a result of the enacted law, we were required to revalue deferred tax assets and liabilities existing as of December 31, 2017 from the 35% federal rate in effect through the end of 2017, to the new 21% rate. Furthermore, we recorded a reduction to our deferred tax assets and a corresponding reduction to our valuation allowance. Accordingly, there was no impact to our income statement due to the reduction in the U.S. corporate tax rate. Due to the changes to corporate AMT, we recorded an AMT benefit in fiscal year 2017 due to the expected refund for AMT paid in fiscal year 2015 and the lack of provision required for 2017.

Our preliminary estimate of the TCJA and the remeasurement of our deferred tax assets and liabilities is subject to the finalization of management's analysis related to certain matters, such as developing interpretations of the provisions of the TCJA, changes to certain estimates and the filing of our tax returns. U.S. Treasury regulations, administrative interpretations or court decisions interpreting the TJCA may require further adjustments and changes in our estimates. The final determination of the TCJA and the remeasurement of our deferred assets and liabilities will be completed as additional information becomes available, but no later than one year from the enactment of the TCJA. We expect to complete our analysis within the measurement period in accordance with Staff Accounting Bulletin No. 118, or SAB 118.

For additional details regarding our accounting for income taxes, see Note 10 in the accompanying consolidated financial statements appearing elsewhere in this Annual Report on Form 10-K.

PENDING AND RECENTLY ADOPTED ACCOUNTING PRONOUNCEMENTS

For detailed information regarding recently issued accounting pronouncements and the expected impact on our consolidated financial statements, see Note 2 in the accompanying consolidated financial statements appearing elsewhere in this Annual Report on Form 10-K.

RESULTS OF OPERATIONS

Comparison of the years ended December 31, 2017 and 2016

The following table summarizes our results of operations for the years ended December 31, 2017 and 2016, together with the changes in those items in dollars.

(in thousands)	Year ended December 31, 2017	2016	Change
Revenue:			
License and research and development revenue	$ 62	$ 174	$ (112)
Other revenue	143,829	—	143,829
Total revenue	143,891	174	143,717
Operating expenses:			
Research and development	30,223	36,983	(6,760)
General and administrative	21,019	14,358	6,661
Total operating expenses	51,242	51,341	(99)
Income (Loss) from operations	92,649	(51,167)	143,816
Investment income	1,336	447	889
Other income	3,601	—	3,601
Interest and other expense	(815)	—	(815)
Loss on extinguishment of debt	(1,432)	—	(1,432)
Income (Loss) before income taxes	95,339	(50,720)	146,059
(Benefit) Provision for income taxes	(300)	—	(300)
Net income (loss)	$ 95,639	$ (50,720)	$ 146,359

License and Research and Development Revenue

License and research and development revenue was $62 thousand for the year ended December 31, 2017 as compared to $174 thousand for the prior year period, a decrease of $112 thousand. The decrease in license and research and development revenue in the 2017 period was primarily due to a decrease in revenue recognized for services performed under our Celgene and Jazz Pharmaceuticals collaboration agreements of $58 thousand and $54 thousand, respectively. These changes were attributable to the completion of clinical conduct under these programs in 2015.

Other Revenue

Other revenue recognized during the year ended December 31, 2017 of $143.8 million was attributable to the closing of the transaction contemplated by the Asset Purchase Agreement with Vertex, discussed in detail in Note 14 in the consolidated financial statements appearing elsewhere in this Annual Report on Form 10-K.

As of December 31, 2017, we had deferred revenue of:

- $7.2 million related to our collaboration with Celgene, $1.1 million of which is attributable to the CTP-730 program and $6.1 million of which is attributable to two additional license programs, as discussed further in Note 12 to the consolidated financial statements appearing elsewhere in this Annual Report on Form 10-K;
- $39 thousand related to our collaboration with Jazz Pharmaceuticals and associated with research and development services to be performed;
- $2.8 million related to a payment received from GSK; and
- $0.3 million related to our Asset Purchase Agreement with Vertex for transition services.

Research and development expenses

The following table summarizes our external research and development expenses, by program, for the years ended December 31, 2017 and 2016, with our internal research expenses separately classified by category. Because Avanir is conducting the clinical development of AVP-786 at its expense, we made no investment in the program during these periods. External research and development expenses related to CTP-692 were immaterial during the fiscal year ended December 31, 2017.

(in thousands)	Year ended December 31, 2017	2016
CTP-543 external costs	$ 6,299	$ 7,603
CTP-656 external costs	3,076	9,592
CTP-730 external costs	19	31
JZP-386 external costs	—	19
External costs for other programs	1,481	1,732
Employee and contractor-related expenses	15,685	14,523
Facility and other expenses	3,663	3,483
Total research and development expenses	$ 30,223	$ 36,983

Research and development expenses were $30.2 million for the year ended December 31, 2017, compared to $37.0 million for the prior year period, a decrease of $6.8 million. This decrease was primarily due to a decrease of $6.5 million and $1.3 million in direct external expenses associated with CTP-656 and CTP-543, respectively. The decrease in CTP-656 expenses in 2017 was attributable to costs incurred related to the Phase 1 clinical testing and Phase 2 manufacturing activities during the year ended December 31, 2016, compared to costs incurred related to the Phase 2 clinical testing through July 2017 when the sale of CTP-656 to Vertex under the Asset Purchase Agreement closed.

The decrease in CTP-543 external expenses was driven by the timing to initiate the Phase 2a clinical trial. The decrease in external costs for other programs of $0.2 million was due to decreased consulting expenses for outsourced research development. The increase in employee and contractor-related expenses was primarily attributable to increased non-cash stock-based compensation expenses.

General and administrative expenses

General and administrative expenses were $21.0 million for the year ended December 31, 2017, compared to $14.4 million for the prior year. The increase of $6.6 million was attributable to a $4.1 million increase in consulting and professional fees associated with the CTP-656 Asset Purchase Agreement and intellectual property matters related to CTP-543, and a $2.5 million increase in staffing costs, primarily due to an increase in non-cash stock-based compensation expenses.

Investment income

Investment income was $1.3 million for the year ended December 31, 2017, compared to $0.4 million for the prior year period. The increase is attributable to an increase in investments which is due to the upfront payment from Vertex as a result of the closing of the transaction contemplated by the Asset Purchase Agreement, discussed in Note 14 of the consolidated financial statements appearing elsewhere in this Annual Report on Form 10-K.

Other income

Other income was $3.6 million during the year ended December 31, 2017 due to the disgorgement of short-swing profits arising from sales of the Company's stock by a 10% stockholder pursuant to Section 16(b) of the Securities and Exchange Act of 1934.

Interest and other expense

Interest expense recorded during the year ended December 31, 2017 is attributable to the interest that was due under our loan facility with Hercules and amortization of the loan discount. All our outstanding indebtedness and obligations owed to Hercules were paid in full, and the loan agreement was terminated in September 2017. Additional information regarding the debt facility is available in Note 15 of the consolidated financial statements appearing elsewhere in this Annual Report on Form 10-K.

Loss on extinguishment of debt

As a result of the prepayment of the debt facility with Hercules, we recognized a loss on the extinguishment of debt of $1.4 million. All our outstanding indebtedness and obligations owed to Hercules were paid in full on September 7, 2017, and the loan agreement was terminated.

Provision for income taxes

We recorded a tax benefit of $0.3 million during the year ended December 31, 2017. The tax benefit recorded in fiscal year 2017 is the result of the alternative minimum tax ("AMT") paid in fiscal year 2015, which is refundable under the Tax Cuts and Jobs Act of 2017. Income taxes that would otherwise have been due on the 2017 taxable income were offset with the tax benefit of net operating loss carryforwards which had previously had a full valuation allowance, except for $1.9 million of AMT incurred due to the limitation on use of net operating loss carryforwards when determining AMT. However, the 2017 AMT is also refundable under the Tax Cuts and Jobs Act of 2017 and thus we have not recorded a tax provision for this amount. The total amount of refundable AMT credits of $2.2 million is reflected as income tax receivable in the accompanying consolidated balance sheet as of December 31, 2017. No tax benefit or provision was recorded during the year ended December 31, 2016 due to the net loss generated.

We provide a full valuation allowance for any tax benefit related to net operating losses due to the uncertainty of the ability to realize such benefits.

Comparison of the years ended December 31, 2016 and 2015

The following table summarizes our results of operations for the years ended December 31, 2016 and 2015, together with the changes in those items in dollars.

	Year ended December 31,		
(in thousands)	**2016**	**2015**	**Change**
Revenue:			
License and research and development revenue	$ 174	$ 6,574	$ (6,400)
Other revenue	—	50,155	(50,155)
Milestone revenue	—	10,000	(10,000)
Total revenue	174	66,729	(66,555)
Operating expenses:			
Research and development	36,983	28,885	8,098
General and administrative	14,358	13,056	1,302
Total operating expenses	51,341	41,941	9,400
(Loss) Income from operations	(51,167)	24,788	(75,955)
Investment income	447	124	323
Interest and other expense	—	(309)	309
(Loss) Income before income taxes	(50,720)	24,603	(75,323)
Provision for income taxes	—	429	(429)
Net (loss) income	$ (50,720)	$ 24,174	$ (74,894)

License and Research and Development Revenue

License and research and development revenue was $0.2 million for the year ended December 31, 2016 as compared to $6.6 million for the prior year period, a decrease of $6.4 million. The decrease in revenue in the 2016 period was primarily due to a decrease in revenue recognized for services performed under our Celgene and Jazz Pharmaceuticals collaboration agreements of $5.5 million and $0.8 million, respectively. These changes were attributable to the completion of clinical conduct under these programs in 2015.

Other Revenue

Other revenue recognized during the year ended December 31, 2015 was attributable to our patent assignment agreement with Auspex, whereby we received a one-time change in control payment of $50.2 million from Auspex, which was acquired by Teva Pharmaceutical Industries Ltd. in May 2015.

Milestone Revenue

Milestone revenue recognized during the year ended December 31, 2015 was attributable to an $8.0 million milestone payment earned upon completion of Phase 1 clinical evaluation for CTP-730 as well as a $2.0 million milestone payment earned as a result of the initial dosing in a Phase 3 clinical trial of AVP-786.

Research and development expenses

The following table summarizes our external research and development expenses, by program, for the years ended December 31, 2016 and 2015, with our internal research expenses separately classified by category. Because Avanir is conducting the clinical development of AVP-786 at its expense, we made minimal investment in the program during these periods.

	Year ended December 31,	
(in thousands)	**2016**	**2015**
CTP-656 external costs	$ 9,592	$ 3,759
CTP-543 external costs	7,603	2,064
CTP-730 external costs	31	2,711
JZP-386 external costs	19	1,084
External costs for other programs	1,732	2,622
Employee and contractor-related expenses	14,523	13,507
Facility and other expenses	3,483	3,138
Total research and development expenses	$ 36,983	$ 28,885

Research and development expenses were $37.0 million for the year ended December 31, 2016, compared to $28.9 million for the prior year period, an increase of $8.1 million. This increase was primarily due to an increase of $5.8 million and $5.5 million in direct external expenses associated with CTP-656 and CTP-543, respectively, which were partially attributable to the conduct of Phase 1 clinical testing during the year ended December 31, 2016, as well as costs incurred to support the advancement of CTP-656 and CTP-543 into Phase 2 clinical testing. The increase in employee and contractor-related expenses of $1.0 million was attributable to higher compensation expenses as compared to the 2015 period, primarily due to an increase in headcount.

The decrease in CTP-730 and JZP-386 expenses in the 2016 period of $2.7 million and $1.1 million, respectively, was attributable to the completion of clinical conduct under these programs in 2015. The decrease of $0.9 million in external costs for other programs in the 2016 period was primarily attributable to the discontinuation of our CTP-354 program and the completion of clinical evaluation of the CTP-499 program.

General and administrative expenses

General and administrative expenses were $14.4 million for the year ended December 31, 2016, compared to $13.1 million for the prior year. The increase of $1.3 million was primarily attributable to a $1.2 million increase in non-cash stock-based compensation expense.

Investment income

Investment income was $0.4 million for the year ended December 31, 2016, compared to $0.1 million for the prior year period. The increase is attributable to higher yielding investments, resulting in higher interest earned on our investments.

Interest and other expense

On October 1, 2015, our 2011 debt facility with Hercules Technology Growth Capital, Inc., or Hercules, matured. We fulfilled all obligations under the 2011 debt facility as of the maturity date, and as a result, no interest expense was recorded during the twelve months ended December 31, 2016, as compared to $0.3 million recorded during the twelve months ended December 31, 2015.

Provision for income taxes

No tax provision was recorded during the year ended December 31, 2016 due to the net loss generated. We recorded a tax provision of $0.4 million during the year ended December 31, 2015. The tax provision of $0.4 million is attributable to the federal limitation on alternative minimum tax net operating loss carryforwards.

LIQUIDITY AND CAPITAL RESOURCES

We have incurred cumulative losses and negative cash flows from operations since our inception in April 2006, and as of December 31, 2017, we had an accumulated deficit of $76.2 million. Although we generated net income in fiscal year 2017 and 2015 due to the one-time payments from Vertex and Auspex, respectively, we anticipate that we will continue to incur losses for at least the next several years. We expect that our research and development and general and administrative expenses will continue to increase and, as a result, we will need additional capital to fund our operations, which we may raise through a combination of equity offerings, debt financings, additional collaborations and licensing arrangements, and other sources.

We have financed our operations to date primarily through the public offering and private placement of our equity, debt financing and funding from collaborations and patent assignments. During February 2014, we completed our initial public offering, or IPO, whereby we sold 6,649,690 shares of common stock at a price to the public of $14.00 per share, raising aggregate net proceeds of $83.1 million. During March 2015, we sold 3,300,000 shares of common stock through an underwritten public offering at a price to the public of $15.15 per share, raising aggregate net proceeds of $46.7 million.

In June 2015, we received proceeds of $50.2 million in connection with the change in control payment from Auspex, relating to Teva Pharmaceutical Industries Ltd.'s acquisition of Auspex, discussed further in Note 13 in the consolidated financial statements.

On July 25, 2017, the Vertex Asset Purchase Agreement, discussed further in Note 14 to the consolidated financial statements appearing elsewhere in this Annual report on Form 10-K, was completed and Vertex paid us $160 million in cash consideration, with $16 million of such consideration to initially be held in escrow.

As of December 31, 2017 we had cash and cash equivalents and investments of $203.2 million. Cash in excess of immediate requirements is invested in accordance with our investment policy, primarily with a view to liquidity and capital preservation. Currently, our funds are held in U.S. government-backed securities and money market mutual funds consisting of U.S. government-backed securities.

Cash flows

The following table sets forth the primary sources and uses of cash for each of the periods set forth below:

	Year ended December 31,		
(in thousands)	**2017**	**2016**	**2015**
Net cash provided by (used in):			
Operating activities	$ 102,927	$ (45,343)	$ 23,061
Investing activities	(121,307)	(7,213)	14,569
Financing activities	5,490	601	41,484
Net (decrease) increase in cash and cash equivalents	$ (12,890)	$ (51,955)	$ 79,114

Comparison of the years ended December 31, 2017, 2016 and 2015

Operating activities. The cash provided by or used for operating activities generally approximates our net income (loss) adjusted for non-cash items and changes in operating assets and liabilities. The cash provided by operating activities during the year ended December 31, 2017 was primarily the result of the receipt of $144 million upon the closing of the CTP-656 asset sale to Vertex in July 2017, partially offset by development activities associated with CTP-656, CTP-543, and research. The cash used during the year ended December 31, 2016 was largely driven by Phase 1 clinical studies and other development activities associated with CTP-656 and CTP-543. The cash provided by operating activities during the year ended December 31, 2015 was due to the receipt of $50.2 million from Auspex for a change in control payment partially offset by research and development and general and administrative operating expenses during the year.

Investing activities. Net cash used in investing activities consisted of purchases of investments, purchases of fixed assets, and proceeds from the maturity of investments. Net cash used to purchase investments for the years ended December 31, 2017, 2016 and 2015 was $206.2 million, $132.3 million and $163.0 million, respectively. Net cash provided by maturities of investments for the years ended December 31, 2017, 2016 and 2015 was $85.8 million, $125.9 million and $178.5 million, respectively. Purchases of fixed assets for the years ended December 31, 2017, 2016 and 2015 was $0.9 million, $0.8 million and $0.9 million, respectively.

Financing activities. During the years ended December 31, 2017, 2016, and 2015, our financing activities provided cash of $5.5 million, $0.6 million and $41.5 million, respectively. During the 2017 period, cash provided by financing activities was largely driven by the net proceeds of $29.7 million under our Loan Agreement with Hercules in June 2017 and proceeds from the exercise of stock options of $6.6 million, partially offset by the prepayment of our Loan Agreement with Hercules in September 2017. The cash provided by financing activities during the year ended December 31, 2016 was attributable to proceeds from the exercise of stock options of $0.6 million. The cash provided by financing activities during the year ended December 31, 2015 was primarily due to the receipt of net public offering proceeds of $47.0 million in March 2015 and proceeds from the exercise of stock options of $1.8 million, offset by the repayment of the Hercules debt facility entered into in December 2011.

Credit Facilities

In December 2011, we executed a Loan and Security Agreement with Hercules, which provided for up to $20.0 million in funding, to be made available in two tranches. We borrowed the first tranche of $7.5 million in December 2011 and the second tranche of $12.5 million in March 2012. On October 1, 2015, we made our final payment to Hercules, thereby fulfilling all obligations under the Loan and Security Agreement. Through the maturity date on October 1, 2015, each advance had an interest rate of 8.5%.

In connection with the December 2011 borrowing under the Loan and Security Agreement, we issued to Hercules a warrant to purchase an aggregate of 200,000 shares of Series C preferred stock with an exercise price of $2.50 per share. In connection with the March 2012 borrowing under the Loan and Security Agreement, the warrant we issued to Hercules automatically became exercisable for an additional 200,000 shares of Series C preferred stock. Upon completion of our IPO in February 2014 the warrant became exercisable for an aggregate of 70,796 shares of our common stock at an exercise price of $14.13 per share and the related warrant liability was reclassified to additional paid-in capital.

On June 8, 2017, we entered into a Loan Agreement with Hercules, which provided for up to $30.0 million in funding, through a single advance. We incurred $0.3 million in loan issuance costs paid directly to the lenders, which was offset against the loan proceeds as a loan discount. The advance under the Loan and Security Agreement bore interest at a variable rate of the greater of 8.55% and an amount equal to 8.55% plus the prime rate of interest minus 4.50%.

Pursuant to the Loan Agreement, we had the option to prepay the principal of the Loan Agreement at any time subject to a prepayment charge; however the prepayment charge was waived upon the completion of the sale of CTP-656 to Vertex, discussed further in Note 14, and the prepayment of the Term Loan Facility after the 90th day following the closing date of the Loan Agreement but prior to the six month anniversary of the closing date of the Loan Agreement.

On September 7, 2017, we paid a total of $30.8 million to Hercules, representing the principal, accrued and unpaid interest, fees, costs and expenses outstanding under the Loan Agreement. Upon the payment of the $30.8 million pursuant to a payoff letter between the Company and Hercules, all outstanding indebtedness and obligations of the Company owed to Hercules under the Loan Agreement were paid in full, and the Loan Agreement was terminated.

In connection with the entry into the Loan Agreement, we issued warrants (the "Warrants") to certain entities affiliated with Hercules, exercisable for an aggregate of 61,273 shares of the Company’s common stock at an exercise price of $12.24 per share. The Warrants have a five year term, expiring June 8, 2022, and may be exercised on a cashless basis. The Hercules Warrants had a total relative fair value of $0.5 million upon issuance and were recorded as a debt discount.

Operating capital requirements

We do not anticipate commercializing any of our product candidates for several years. Although we generated net income in 2017 and 2015 due to one-time payments from Vertex and Auspex, respectively, we anticipate that we will continue to generate losses for the foreseeable future, and we expect the losses to increase as we continue the development of, and seek regulatory

approvals for, our product candidates, and begin to commercialize any approved products for which we retain commercialization rights. We are subject to all of the risks incident in the development of new drug products, and we may encounter unforeseen expenses, difficulties, complications, delays and other unknown factors that may adversely affect our business, as well as additional risks stemming from the unproven nature of deuterated drugs.

Based on our current expectations, including with respect to our development plans, we believe our existing cash and cash equivalents and investments as of December 31, 2017 will enable us to fund our operating expenses and capital expenditure requirements into 2021. However, we will require additional capital for the further development of our existing product candidates and may also need to raise additional funds sooner to pursue other development activities related to additional product candidates.

To date, we have not generated any revenue from product sales. We do not expect to generate significant revenue from product sales unless and until we, or our collaborators, obtain marketing approval of and commercialize one of our current or future product candidates. Because our product candidates are in various stages of development and the outcome of these efforts is uncertain, we cannot estimate the actual amounts necessary to successfully complete development and commercialization of our product candidates or whether or when we will achieve profitability. We anticipate that we will continue to generate losses for the foreseeable future, and we expect the losses to increase as we continue the development of, and seek marketing approvals for, our product candidates, and begin to commercialize any approved products for which we retain commercialization rights.

Until such time, if ever, as we can generate substantial product revenues, we expect to finance our cash needs through a combination of equity offerings, debt financings and additional collaborations, strategic alliances and licensing arrangements, and other arrangements. Except for any obligations of our collaborators to reimburse us for research and development expenses or to make milestone payments under our agreements with them, we do not have any additional committed external sources of funds. Additional capital may not be available on reasonable terms, if at all. If we are unable to raise additional funds when needed, we may be required to delay, limit, reduce or terminate our product development or future commercialization efforts or grant rights to develop and market product candidates that we would otherwise prefer to develop and market ourselves. If we raise additional funds through the issuance of additional debt or equity securities, it could result in dilution to our existing stockholders, increased fixed payment obligations and these securities may have rights senior to those of our common stock. We may become subject to covenants under any future indebtedness that could limit our ability to take specific actions, such as incurring additional debt, making capital expenditures or declaring dividends, which could adversely impact our ability to conduct our business.

Our expectation with respect to the period of time through which our financial resources will be adequate to support our operations is a forward-looking statement and involves risks and uncertainties, and actual results could vary as a result of a number of factors, including those discussed in the "Risk Factors" section of this Annual Report on Form 10-K. We have based this estimate on assumptions that may prove to be wrong, and we could utilize our available capital resources sooner than we currently expect. If we cannot expand our operations or otherwise capitalize on our business opportunities because we lack sufficient capital, our business, financial condition and results of operations could be materially adversely affected.

Contractual obligations

The following table summarizes our contractual obligations at December 31, 2017:

(in thousands)	Total	Less than 1 year	1 to 3 years	3 to 5 years	More than 5 years
Operating lease obligations(1)	$ 1,208	$ 1,208	$ —	$ —	$ —
Operating lease obligations(2)	31,348	—	8,104	9,376	13,868
Total contractual obligations	$ 32,556	$ 1,208	$ 8,104	$ 9,376	$ 13,868

(1) Consists of future lease payments under the operating lease for our office and laboratory space at 99 Hayden Avenue, Lexington, Massachusetts. The operating lease expires on September 30, 2018.

(2) Consists of future lease payments under the new operating lease signed on December 21, 2017 for our office and laboratory at 65 Hayden Avenue, Lexington, Massachusetts. The operating lease expires ten years after the Base Rent Commencement Date, defined in the lease, with two optional extension terms of five years each.

We have an obligation to make a payment to GSK of up to $2.8 million if we commercialize CTP-499 or if we receive cash proceeds from re-licensing or transferring the rights to our CTP-499 program.

We enter into contracts in the normal course of business with contract research organizations for clinical and nonclinical research studies, manufacturing, research supplies and other services and products for operating purposes. These contracts generally provide for termination on notice, and therefore are cancelable contracts and not included in the table of contractual obligations and commitments.

OFF-BALANCE SHEET ARRANGEMENTS

We did not have during the periods presented, and we do not currently have, any off-balance sheet arrangements, as defined in the rules and regulations of the SEC.

ITEM 7A. Quantitative and Qualitative Disclosures About Market Risk

We are exposed to market risk related to changes in interest rates. Our current investment policy is to maintain a diversified investment portfolio in U.S. government-backed securities and money market mutual funds consisting of U.S. government-backed securities. Our cash is deposited in and invested through highly rated financial institutions in North America. As of December 31, 2017 and 2016, we had $203.2 million and $96.2 million of cash, cash equivalents and investments, respectively. The fair value of cash equivalents and short-term investments is subject to change as a result of potential changes in market interest rates. Due to the short-term maturities of our cash equivalents and the low risk profile of these investments, an immediate 100 basis point change in interest rates at levels as of December 31, 2017 would not have a material effect on the fair market value of our cash equivalents and short term investments.

We contract with suppliers of raw materials and contract manufacturers internationally. Transactions with these providers are predominantly settled in U.S. dollars and, therefore, we believe that we have only minimal exposure to foreign currency exchange risks. We do not hedge against foreign currency risks.

Inflation generally affects us by increasing our cost of labor and clinical trial costs. We do not believe that inflation had a material effect on our business, financial condition or results of operations during the years ended December 31, 2017, 2016 or 2015.

ITEM 8. Financial Statements and Supplementary Data

INDEX TO FINANCIAL STATEMENTS

Report of Independent Registered Public Accounting Firm

To the Stockholders and the Board of Directors of Concert Pharmaceuticals, Inc.

Opinion on the Financial Statements
We have audited the accompanying consolidated balance sheets of Concert Pharmaceuticals, Inc. (the "Company") as of December 31, 2017 and 2016, the related consolidated statements of operations and comprehensive income (loss), stockholders' equity, and cash flows for each of the three years in the period ended December 31, 2017, and the related notes (collectively referred to as the "consolidated financial statements"). In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Company at December 31, 2017 and 2016, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2017, in conformity with U.S. generally accepted accounting principles.

Basis for Opinion
These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on the Company's financial statements based on our audits. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) (PCAOB) and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether due to error or fraud. The Company is not required to have, nor were we engaged to perform, an audit of its internal control over financial reporting. As part of our audits we are required to obtain an understanding of internal control over financial reporting but not for the purpose of expressing an opinion on the effectiveness of the Company's internal control over financial reporting. Accordingly, we express no opinion.

Our audits included performing procedures to assess the risks of material misstatement of the financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures include examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the financial statements. We believe that our audits provide a reasonable basis for our opinion.

/s/ Ernst & Young LLP

We have served as the Company's auditor since 2007.
Boston, Massachusetts
March 1, 2018

CONCERT PHARMACEUTICALS, INC.
CONSOLIDATED BALANCE SHEETS

	December 31,	
	2017	2016
	(Amounts in thousands, except share and per share data)	
Assets		
Current assets:		
Cash and cash equivalents	$ 27,665	$ 40,555
Investments, available for sale	175,500	55,630
Interest receivable	628	164
Accounts receivable	155	27
Prepaid expenses and other current assets	1,786	1,353
Total current assets	205,734	97,729
Property and equipment, net	2,165	2,199
Restricted cash	1,557	400
Other assets	34	67
Income taxes receivable	2,246	—
Total assets	$ 211,736	$ 100,395
Liabilities and stockholders' equity		
Current liabilities:		
Accounts payable	$ 658	$ 545
Accrued expenses and other liabilities	4,299	3,853
Income taxes payable	46	—
Deferred revenue, current portion	1,442	1,172
Total current liabilities	6,445	5,570
Deferred revenue, net of current portion	8,859	8,878
Deferred lease incentive, net of current portion	—	249
Deferred rent, net of current portion	—	104
Total liabilities	15,304	14,801
Commitments (Note 11)		
Stockholders' equity:		
Preferred stock, $0.001 par value per share; 5,000,000 shares authorized; no shares issued and outstanding in 2017 and 2016, respectively	—	—
Common stock, $0.001 par value per share; 100,000,000 shares authorized; 23,147,779 and 22,319,516 shares issued and 23,140,378 and 22,316,982 outstanding in 2017 and 2016 , respectively	23	22
Additional paid-in capital	273,059	257,461
Accumulated other comprehensive loss	(407)	(7)
Accumulated deficit	(76,243)	(171,882)
Total stockholders' equity	196,432	85,594
Total liabilities and stockholders' equity	$ 211,736	$ 100,395

See accompanying notes.

CONCERT PHARMACEUTICALS, INC.
CONSOLIDATED STATEMENTS OF OPERATIONS AND COMPREHENSIVE INCOME (LOSS)

	Year ended December 31,		
	2017	2016	2015
	(Amounts in thousands, except per share data)		
Revenue:			
License and research and development revenue	$ 62	$ 174	$ 6,574
Other revenue (Note 14 and Note 13)	143,829	—	50,155
Milestone revenue	—	—	10,000
Total revenue	143,891	174	66,729
Operating expenses:			
Research and development	30,223	36,983	28,885
General and administrative	21,019	14,358	13,056
Total operating expenses	51,242	51,341	41,941
Income (Loss) from operations	92,649	(51,167)	24,788
Investment income	1,336	447	124
Other income (Note 16)	3,601	—	—
Interest and other expense	(815)	—	(309)
Loss on extinguishment of debt (Note 15)	(1,432)	—	—
Income (Loss) before income taxes	95,339	(50,720)	24,603
(Benefit) Provision for income taxes	(300)	—	429
Net income (loss)	$ 95,639	$ (50,720)	$ 24,174
Other comprehensive (loss) income:			
Unrealized (loss) income on investments, net of tax	(400)	11	(4)
Comprehensive income (loss)	$ 95,239	$ (50,709)	$ 24,170
Net income (loss) attributable to common stockholders:			
Basic	$ 95,195	$ (50,720)	$ 24,174
Diluted	$ 95,210	$ (50,720)	$ 24,174
Net income (loss) per share attributable to common stockholders:			
Basic	$ 4.20	$ (2.28)	$ 1.14
Diluted	$ 4.06	$ (2.28)	$ 1.09
Weighted-average number of common shares used in net income (loss) per share attributable to common stockholders:			
Basic	22,641	22,233	21,152
Diluted	23,442	22,233	22,267

See accompanying notes.

CONCERT PHARMACEUTICALS, INC.
CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY

	Common Stock			Additional paid-in capital	Accumulated other comprehensive income	Accumulated deficit	Total stockholders' equity
	Issued	In Treasury	Amount				
	(in thousands)						
Balance at December 31, 2014	18,234	—	$ 18	$ 200,157	$ (14)	$ (145,336)	$ 54,825
Proceeds from public offering of common stock, net of underwriting discounts and offering expenses	3,300	—	3	46,682	—	—	46,685
Exercise of stock options	633	2	1	1,843	—	—	1,844
Unrealized loss on short-term investments	—	—	—	—	(4)	—	(4)
Stock-based compensation expense	—	—	—	2,981	—	—	2,981
Income tax benefit from option exercises				130			130
Net income	—	—	—	—	—	24,174	24,174
Balance at December 31, 2015	22,167	2	$ 22	$ 251,793	$ (18)	$ (121,162)	$ 130,635
Exercise of stock options	153	1	—	601	—	—	601
Unrealized gain on short-term investments	—	—	—	—	11	—	11
Stock-based compensation expense	—	—	—	5,067	—	—	5,067
Net loss	—	—	—	—	—	(50,720)	(50,720)
Balance at December 31, 2016	22,320	3	$ 22	$ 257,461	$ (7)	$ (171,882)	$ 85,594
Exercise of stock options	828	5	1	6,586	—	—	6,587
Unrealized loss on short-term investments, net of tax	—	—	—	—	(400)	—	(400)
Stock-based compensation expense	—	—	—	8,500	—	—	8,500
Stock warrants				512	—	—	512
Net income	—	—	—	—	—	95,639	95,639
Balance at December 31, 2017	23,148	8	$ 23	$ 273,059	$ (407)	$ (76,243)	$ 196,432

See accompanying notes.

CONCERT PHARMACEUTICALS, INC.
CONSOLIDATED STATEMENTS OF CASH FLOWS

	Year ended December 31,		
	2017	**2016**	**2015**
		(in thousands)	
Operating activities			
Net income (loss)	$ 95,639	$ (50,720)	$ 24,174
Adjustments to reconcile net income (loss) to net cash provided by (used in) operating activities:			
Depreciation and amortization	1,008	893	785
Stock-based compensation expense	8,500	5,067	2,981
Accretion of premiums and discounts on investments	90	504	715
Amortization of discount on loan payable	166	—	74
Amortization of deferred financing costs	—	—	29
Amortization of deferred lease incentive	(324)	(315)	(308)
Loss on disposal of asset	46	2	4
Loss on extinguishment of debt	1,432	—	—
Changes in operating assets and liabilities:			
Accounts receivable	(107)	43	951
Interest receivable	(464)	17	81
Prepaid expenses and other current assets	(433)	314	(491)
Restricted cash	(1,157)	—	—
Other assets	33	11	23
Accounts payable	113	44	(90)
Accrued expenses and other liabilities	436	(957)	(223)
Income taxes receivable	(2,246)	—	—
Income taxes payable	46	(75)	75
Deferred rent	(102)	(51)	(68)
Deferred revenue	251	(120)	(5,651)
Net cash provided by (used in) operating activities	102,927	(45,343)	23,061
Investing activities			
Purchases of property and equipment	(947)	(770)	(868)
Purchases of investments	(206,207)	(132,344)	(163,025)
Maturities of investments	85,847	125,901	178,462
Net cash (used in) provided by investing activities	(121,307)	(7,213)	14,569
Financing activities			
Proceeds from loan, net	29,659	—	—
Repayment of loan	(30,745)	—	(7,175)
Proceeds from public offering of common stock, net of underwriting discounts and commissions	—	—	46,995
Proceeds from exercise of stock options	6,576	601	1,844
Income tax benefit from exercise of stock options	—	—	130
Payment of public offering costs	—	—	(310)
Net cash provided by financing activities	5,490	601	41,484
Net (decrease) increase in cash and cash equivalents	(12,890)	(51,955)	79,114
Cash and cash equivalents at beginning of period	40,555	92,510	13,396
Cash and cash equivalents at end of period	$ 27,665	$ 40,555	$ 92,510
Supplemental cash flow information:			
Cash paid for income taxes	$ 1,900	$ 75	$ 225
Cash paid for interest	$ 648	$ —	$ 287
Purchases of property and equipment unpaid at period end	$ 65	$ 20	$ 42
Issuance of stock warrants	$ 512	$ —	$ —

See accompanying notes.

1. Nature of Business

Concert Pharmaceuticals, Inc., or Concert or the Company, was incorporated on April 12, 2006 as a Delaware corporation with operations based in Lexington, Massachusetts. The Company is a clinical stage biopharmaceutical company that applies its extensive knowledge of deuterium chemistry to discover and develop novel small molecule drugs. The Company's approach starts with previously studied compounds, including approved drugs, that the Company believes can be improved with deuterium substitution to provide better pharmacokinetic or metabolic properties, enhancing clinical safety, tolerability or efficacy. The Company believes this approach may enable drug discovery and clinical development that is more efficient and less expensive than conventional small molecule drug research and development. The Company's pipeline includes multiple clinical-stage candidates and a number of preclinical compounds that it is currently assessing.

In March 2015, the Company sold 3,300,000 shares of common stock in a public offering at a price to the public of $15.15 per share, resulting in net proceeds to the Company of approximately $46.7 million after deducting underwriting discounts and commissions and offering expenses. In June 2015, the Company received a one-time payment of $50.2 million from Auspex Pharmaceuticals, Inc., or Auspex, pursuant to a patent assignment agreement between Concert and Auspex. Concert became eligible to receive the payment due to a change of control of Auspex, which was acquired by Teva Pharmaceutical Industries Ltd. in May 2015 (see Note 13).

On March 3, 2017, the Company entered into an Asset Purchase Agreement (the "Asset Purchase Agreement") with Vertex Pharmaceuticals, Inc., through Vertex Pharmaceuticals (Europe) Limited ("Vertex"), pursuant to which the Company agreed to sell and assign CTP-656, now known as VX-561, and other cystic fibrosis assets of the Company, for up to $250 million subject to the satisfaction of certain closing conditions. On July 25, 2017, the transaction contemplated by the Asset Purchase Agreement closed and Vertex paid the Company $160 million in cash consideration, with $16 million to be held in escrow. Additional information concerning the sale of CTP-656 is discussed further in Note 14.

On June 8, 2017, the Company entered into a Loan and Security Agreement ("Loan Agreement") with Hercules Capital, Inc., ("Hercules"), pursuant to which Hercules agreed to make available to the Company a secured term loan facility in the amount of $30 million ("Term Loan Facility") subject to certain terms and conditions. On September 7, 2017, the Company paid off the outstanding obligation in full resulting in the termination of the Loan Agreement. Additional information concerning the prepayment of the Loan Agreement is discussed further in Note 15.

The Company had cash and cash equivalents and investments of $203.2 million at December 31, 2017. The Company believes that its cash and cash equivalents and investments at December 31, 2017 will be sufficient to allow the Company to fund its current operating plan for at least the next twelve months from the date of issuance of the financial statements. The Company may pursue additional cash resources through public or private financings and by establishing collaborations with or licensing its technology to other companies and through other arrangements.

Since its inception, the Company has generated an accumulated deficit of $76.2 million through December 31, 2017. The Company's operating results may fluctuate significantly from year to year, depending on the timing and magnitude of clinical trial and other development activities under its current development programs. Substantially all the Company's net losses have resulted from costs incurred in connection with its research and development programs and from general and administrative costs associated with its operations. The Company expects to continue to incur significant expenses and increasing operating losses for at least the next several years.

The Company is subject to risks common to companies in the biotechnology industry, including, but not limited to, risks of failure or unsatisfactory results of nonclinical studies and clinical trials, the need to obtain additional financing to fund the future development of its pipeline, the need to obtain marketing approval for its product candidates, the need to successfully commercialize and gain market acceptance of its product candidates, dependence on key personnel, protection of proprietary technology, compliance with government regulations, development by competitors of technological innovations and ability to transition from pilot-scale manufacturing to large-scale production of products.

Unless otherwise indicated, all amounts are in thousands except share and per share amounts.

2. Basis of Presentation and Significant Accounting Policies

Basis of Presentation

The consolidated financial statements have been prepared in accordance with accounting principles generally accepted in the United States of America, or GAAP. Management has determined that the Company operates in one segment: the development of pharmaceutical products on its own behalf or in collaboration with others. All long-lived assets of the Company reside in the United States.

The accompanying consolidated financial statements include the accounts of Concert Pharmaceuticals, Inc. and its wholly owned subsidiaries. All intercompany transactions and balances have been eliminated.

The Company considers events or transactions that occur after the balance sheet date but before the financial statements are issued to provide additional evidence relative to certain estimates or to identify matters that require additional disclosure.

Estimates and Uncertainties

The preparation of the consolidated financial statements in conformity with GAAP requires management to make estimates and assumptions that affect the

reported amounts of assets, liabilities, equity, revenue, expenses and the disclosure of contingent assets and liabilities and the Company's ability to continue as a going concern. In preparing the consolidated financial statements, management used estimates in the following areas, among others: revenue recognition for multiple-element revenue arrangements; income tax expense; stock-based compensation expense; accrued expenses; and the evaluation of the existence of conditions and events that raise substantial doubt regarding the Company's ability to continue as a going concern. Actual results could differ from those estimates.

Cash, Cash Equivalents and Investments

Cash equivalents include all highly liquid investments maturing within 90 days from the date of purchase. Investments consist of securities with original maturities greater than 90 days when purchased. The Company classifies these investments as available-for-sale and records them at fair value in the accompanying consolidated balance sheets. Unrealized gains or losses are included in accumulated other comprehensive income (loss). Premiums or discounts from par value are amortized to investment income over the life of the underlying investment.

Although available to be sold to meet operating needs or otherwise, securities are generally held through maturity. The Company classifies all marketable investments as current assets as these assets are readily available for use in current operations. The cost of securities sold is determined based on the specific identification method for purposes of recording realized gains and losses. During 2017 and 2016, there were no realized gains or losses on sales of investments, and no investments were adjusted for other than temporary declines in fair value.

Fair Value of Financial Measurements

The Company has certain financial assets and liabilities that are recorded at fair value which have been classified as Level 1, 2 or 3 within the fair value hierarchy as described in the accounting standards for fair value measurements:

- Level 1—quoted prices for identical instruments in active markets;
- Level 2—quoted prices for similar instruments in active markets, quoted prices for identical or similar instruments in markets that are not active, and model-derived valuations in which all significant inputs and significant value drivers are observable in active markets; and
- Level 3—valuations derived from valuation techniques in which one or more significant value drivers are unobservable.

For additional information related to fair value measurements, please read Note 3 to the consolidated financial statements.

Concentrations of Credit Risk

Financial instruments that potentially subject the Company to concentration of credit risk consist principally of money market funds, investments (including interest receivable) and accounts receivable. The Company has not experienced any credit losses

in these accounts and does not believe it is exposed to any significant credit risk on these funds. The Company has no foreign exchange contracts, option contracts or other foreign exchange hedging arrangements.

At December 31, 2017 and 2016, substantially all of the Company's cash was deposited in accounts at two financial institutions, thus limiting the amount of credit exposure to any one financial institution. These amounts at times may exceed federally insured limits.

Accounts receivable generally represent amounts due from collaboration partners. The Company monitors economic conditions to identify facts or circumstances that may indicate that any of its accounts receivable are at risk of collection.

Property and Equipment

Property and equipment are recognized at cost and depreciated over their estimated useful lives using the straight-line method. Repair and maintenance costs are expensed as incurred, whereas major improvements are capitalized as additions to property and equipment. Potential impairment is assessed when there is evidence that events or circumstances indicate that the carrying amount of an asset may not be recovered. No such impairment losses have been recorded through December 31, 2017.

Rent Expense

The Company's operating lease for its existing Lexington, Massachusetts facility provides for scheduled annual rent increases throughout the lease term. The Company recognizes the effects of the scheduled rent increases on a straight-line basis over the full term of the lease, which expires in 2018. Additionally, the Company has received certain lease incentives in connection with its existing Lexington, Massachusetts facility lease, which are recognized as a reduction to rent expense over the remaining lease term. Refer to Note 11 for additional details regarding the Company's operating leases.

Rent expense for the years ended December 31, 2017, 2016, and 2015 was $1.1 million, $1.2 million, and $1.2 million, respectively.

Contingencies

The Company records liabilities for legal and other contingencies when information available to the Company indicates that it is probable that a liability has been incurred and the amount of loss can be reasonably estimated. Legal costs in connection with legal and other contingencies are expensed as costs are incurred. No liabilities for legal and other contingencies were accrued as of December 31, 2017 and 2016.

Revenue Recognition

The Company has generated revenue through arrangements with collaborators and nonprofit organizations for the development and commercialization of product candidates. Most recently, the Company completed an Asset Purchase Agreement with Vertex for the sale of CTP-656, now known as VX-561, and other cystic fibrosis assets.

The Company recognizes revenue in accordance with Financial Accounting Standards Board (FASB) Accounting Standards Codification (ASC) Topic 605, *Revenue Recognition* (ASC 605). Accordingly, revenue is recognized when all of the following criteria are met:

- Persuasive evidence of an arrangement exists;
- Delivery has occurred or services have been rendered;
- The seller's price to the buyer is fixed or determinable; and
- Collectability is reasonably assured.

Amounts received prior to satisfying the revenue recognition criteria are recognized as deferred revenue in the Company's consolidated balance sheets. Amounts expected to be recognized as revenue within the 12 months following the balance sheet date of December 31, 2017 are classified as deferred revenue, current portion. Amounts not expected to be recognized as revenue within the 12 months following the balance sheet date of December 31, 2017 are classified as deferred revenue, net of current portion. Amounts recorded as deferred revenue and the timing of recognition of those amounts may change upon the Company's adoption of ASC 606 in the first quarter of fiscal year 2018.

The Company's revenue is currently generated through collaborative research and development, licensing agreements, and asset sales. The terms of these agreements typically contain multiple elements, or deliverables, which may include licenses, or

options to obtain licenses, to product candidates, referred to as exclusive licenses, as well as research and development activities to be performed by the Company on behalf of the collaboration partner related to the licensed product candidates. The terms of these agreements may include payments to the Company of one or more of the following: a nonrefundable, upfront payment; milestone payments; payment of license exercise or option fees with respect to product candidates; fees for research and development services rendered; and royalties on commercial sales of licensed product candidates, if any. To date, the Company has received upfront payments, several milestone payments and certain research and development service payments but has not received any license exercise or option fees or earned royalty revenue as a result of product sales.

When evaluating multiple element arrangements, the Company considers whether the deliverables under the arrangement represent separate units of accounting. This evaluation requires subjective determinations and requires management to make judgments about the individual deliverables and whether such deliverables are separable from the other aspects of the contractual relationship. In determining the units of accounting, management evaluates certain criteria, including whether the deliverables have standalone value, based on the consideration of the relevant facts and circumstances for each arrangement. The consideration received is allocated among the separate units of accounting using the relative selling price method, and the applicable revenue recognition criteria are applied to each of the separate units.

The Company determines the estimated selling price for deliverables within each agreement using vendor-specific objective evidence, or VSOE, of selling price, if available, third-party evidence, or TPE, of selling price if VSOE is not available, or best estimate of selling price, or BESP, if neither VSOE nor TPE is available. Determining the BESP for a deliverable requires significant judgment. The Company has used its BESP to estimate the selling price for licenses to the Company's proprietary technology, since the Company does not have VSOE or TPE of selling price for these deliverables. In those circumstances where the Company utilizes BESP to determine the estimated selling price of a license to the Company's proprietary technology, the Company considers market conditions as well as entity-specific factors, including those factors contemplated in negotiating the agreement, estimated development costs, and the probability of success and the time needed to commercialize a product candidate pursuant to the license. In validating the Company's BESP, the Company evaluates whether changes in the key assumptions used to determine the BESP will have a significant effect on the allocation of arrangement consideration between multiple deliverables.

The Company's multiple-element revenue arrangements may include the following:

Exclusive Licenses. The deliverables under the Company's collaboration agreements generally include exclusive licenses to develop, manufacture and commercialize one or more deuterated compounds. To account for this element of the arrangement, management evaluates whether the exclusive license has standalone value from the undelivered elements based on the consideration of the relevant facts and circumstances of each arrangement, including the research and development capabilities of the collaboration partner. The Company may recognize the arrangement consideration allocated to licenses upon delivery of the license if facts and circumstances indicate that the license has standalone value from the undelivered elements, which generally include research and development services. The Company defers arrangement consideration allocated to licenses if facts and circumstances indicate that the delivered license does not have standalone value from the undelivered elements.

When management believes the license does not have stand-alone value from the other deliverables to be provided in the arrangement, the Company generally recognizes revenue attributed to the license on a straight-line basis over the Company's contractual or estimated performance period, which is typically the term of the Company's research and development obligations. If management cannot reasonably estimate when the Company's performance obligation ends, then revenue is deferred until management can reasonably estimate when the performance obligation ends. The periods over which revenue should be recognized are subject to estimates by management and may change over the course of the research and development and licensing agreement. Such a change could have a material impact on the amount of revenue the Company records in future periods.

Research and Development Services. The deliverables under the Company's collaboration and license agreements may include deliverables related to research and development services to be performed by the Company on behalf of the collaboration partner.

Payments or reimbursements resulting from the Company's research and development efforts are recognized as the services are performed and presented on a gross basis because the Company is the principal for such efforts, so long as there is persuasive evidence of an arrangement, the fee is fixed or determinable, and collection of the related amount is reasonably assured. If there is no discernible pattern of performance and/or objectively measurable performance measures do not exist, then the Company recognizes revenue on a straight-line basis over the period it is expected to complete its performance obligations. Conversely, if the pattern of performance in which the service is provided to the customer can be determined and objectively measurable performance measures exist, then the Company recognizes revenue under the arrangement using the proportional performance

method. Revenue recognized is limited to the lesser of the cumulative amount of payments received or the cumulative amount of revenue earned as of the period end date.

Option Agreements. The Company's arrangements may provide a collaborator with the right to select a deuterated compound for licensing within an initial pre-defined selection period. Under these agreements, a fee would be due to the Company upon the exercise of an option to acquire a license. The accounting for option arrangements is dependent on the nature of the option granted to the collaboration partner. An option is considered substantive if, at the inception of the arrangement, the Company is at risk as to whether the collaboration partner will choose to exercise the option to secure exclusive licenses. Factors that the Company considers in evaluating whether an option is substantive include the overall objective of the arrangement, the benefit the collaborator might obtain from the arrangement without exercising the option, the cost to exercise the option relative to the total upfront consideration and the additional financial commitments or economic penalties imposed on the collaborator as a result of exercising the option. For arrangements under which an option to secure a license is considered substantive, the Company does not consider the license underlying the option to be a deliverable at the inception of the arrangement. For arrangements under which the option to secure a license is not considered substantive, the Company considers the license underlying the option to be a deliverable at the inception of the arrangement and, upon delivery of the license, would apply the multiple-element revenue arrangement criteria to the license and any other deliverables to determine the appropriate revenue recognition. A significant and incremental discount included in an otherwise substantive option is considered to be a separate deliverable at the inception of the arrangement.

Milestone Revenue. The Company's collaboration agreements generally include contingent milestone payments related to specified development milestones, regulatory milestones and sales-based milestones. Development milestones are typically payable when a product candidate initiates or advances in clinical trial phases or achieves defined clinical events such as proof-of-concept. Regulatory milestones are typically payable upon submission for marketing approval with regulatory authorities or upon receipt of actual marketing approvals for a compound, approvals for additional indications, upon commercial launch or upon the first commercial sale. Sales-based milestones are typically payable when annual sales reach specified levels.

At the inception of each arrangement that includes milestone payments, the Company evaluates whether each milestone is substantive and at risk to both parties on the basis of the contingent nature of the milestone. This evaluation includes an assessment of whether (a) the consideration is commensurate with either (i) the entity's performance to achieve the milestone or (ii) the enhancement of the value of the delivered item(s) as a result of a specific outcome resulting from the entity's performance to achieve the milestone; (b) the consideration relates solely to past performance; and (c) the consideration is reasonable relative to all of the deliverables and payment terms within the arrangement. The Company evaluates factors such as the scientific, regulatory, commercial and other risks that must be overcome to achieve the respective milestone, the level of effort and investment required to achieve the respective milestone and whether the milestone consideration is reasonable relative to all deliverables and payment terms in the arrangement in making this assessment. Milestones that are not considered substantive are accounted for as license payments and recognized on a straight-line basis over the remaining period of performance.

Research and Development Costs

Research and development costs are expensed as incurred.

Research and development expenses are comprised of costs incurred in providing research and development activities, including salaries and benefits, facilities costs, overhead costs, contract research and development services, and other outside costs. Nonrefundable advance payments for goods and services that will be used in future research and development activities are expensed when the activity has been performed or when the goods have been received rather than when the payment is made.

External research and development expenses associated with the Company's programs include clinical trial site costs, research compounds and clinical manufacturing costs, costs incurred for consultants and other outside services, such as data management and statistical analysis support, and materials and supplies used in support of the clinical and nonclinical programs. Internal costs of the Company's clinical program include salaries, benefits, stock based compensation, and an allocation of the Company's facility costs. When third-party service providers' billing terms do not coincide with the Company's period-end, the Company is required to make estimates of its obligations to those third parties, including clinical trial and pharmaceutical development costs, contractual services costs and costs for supply of its drug candidates, incurred in a given accounting period and record accruals at the end of the period. The Company bases its estimates on its knowledge of the research and development programs, services performed for the period, past history for related activities and the expected duration of the third-party service contract, where applicable.

Accounting for Stock-Based Compensation

The Company issues stock options to certain employees, officers and directors. The Company accounts for stock compensation using the fair value method, which results in the recognition of compensation expense over the vesting period of the awards. See Note 8 for additional information.

Income Taxes

The Company provides deferred tax assets and liabilities for the expected future tax consequences of temporary differences between the Company's financial statement carrying amounts and the tax basis of assets and liabilities using enacted tax rates expected to be in effect in the years in which the differences are expected to reverse. A valuation allowance is provided to reduce the deferred tax assets to the amount that will more likely than not be realized.

The Company evaluates tax positions taken, or expected to be taken, in the course of preparing its tax returns to determine whether the tax positions are "more likely than not" of being sustained by the applicable tax authority. Tax positions not deemed to meet the more-likely-than-not threshold would be recognized as a tax expense.

On December 22, 2017, the President of the United States signed into law the Tax Cuts and Jobs Act ("TCJA"). This legislation makes broad and complex changes to the U.S. tax code, including, but not limited to, (i) reducing the U.S. federal statutory tax rate from 35% to 21%; (ii) eliminating the corporate alternative minimum tax (AMT) and changing how existing AMT credits can be realized; (iii) changing rules related to uses and limitations of net operating loss carryforwards created in tax years beginning after December 31, 2017, and (iv) modifying the officer's compensation limitation. The Company recognizes the effects of changes in tax law, including the TCJA, in the period the law is enacted. Accordingly, the effects of the TCJA have been recognized in the financial statements for the year ended December 31, 2017.

For additional details regarding our accounting for income taxes, see Note 10 in the accompanying consolidated financial statements appearing elsewhere in this Annual Report on Form 10-K.

Guarantees

As permitted under Delaware law, the Company indemnifies its officers and directors for certain events or occurrences while the officer or director is, or was, serving at the Company's request in such capacity. The term of the indemnification is for the officer's or director's lifetime. The maximum potential amount of future payments the Company could be required to make is unlimited; however, the Company has directors' and officers' insurance coverage that limits its exposure and enables it to recover a portion of any future amounts paid.

The Company leases office space under non-cancelable operating leases which are further described in Note 11. The Company has standard indemnification arrangements under the leases that requires it to indemnify the landlords against all costs, expenses, fines, suits, claims, demands, liabilities, and actions directly resulting from any breach, violation, or non-performance of any covenant or condition of the Company's leases.

Pursuant to the Asset Purchase Agreement, discussed further in Note 14, the Company has agreed to indemnify Vertex for certain matters, including breaches of specified representations and warranties, covenants included in the Asset Purchase Agreement and specified tax claims. Representations and warranties, other than certain fundamental representations and warranties, survive for a period of eighteen months following the Closing and the maximum liability of the Company for claims by Vertex related to the breaches of such representations and warranties, with limited exceptions, is limited to the escrow amount, or $16 million. In no event will the aggregate liability of the Company for indemnification exceed the purchase price paid by Vertex, including any milestone payments. Eighteen months after the Closing, any remaining balance in the escrow account not subject to indemnity claims by Vertex will be released to the Company.

As of December 31, 2017 and 2016, the Company had not experienced any material losses related to these indemnification obligations, and no material claims with respect thereto were outstanding. The Company does not expect significant claims related to these indemnification obligations and, consequently, concluded that the fair value of these obligations is negligible, and no related reserves were established.

Other Income

In the fiscal year ended December 31, 2017, the Company received $3.6 million due to a disgorgement of short-swing profits arising from sales of the Company's stock by a 10% stockholder pursuant to Section 16(b) of the Securities and Exchange Act

of 1934. The Company has classified the proceeds from the disgorgement as other income in the accompanying consolidated financial statements in fiscal year 2017.

Comprehensive Income (Loss)

Comprehensive income (loss) is comprised of net income (loss) and other comprehensive income or loss. Other comprehensive income or loss consists of unrealized gains and losses on investments.

Recently Adopted Accounting Pronouncements

In August 2014, the FASB issued ASU No. 2014-15, Disclosure of Uncertainties About an Entity's Ability to Continue as a Going Concern, or ASU 2014-15. ASU 2014-15 amends FASB Accounting Standards Codification, or ASC, 205-40, Presentation of Financial Statements – Going Concern, by providing guidance on determining when and how reporting entities must disclose going-concern uncertainties in their financial statements, including requiring management to perform interim and annual assessments of an entity's ability to continue as a going concern within one year of the date of issuance of the entity's financial statements and providing certain disclosures if there is substantial doubt about the entity's ability to continue as a going concern. The Company was required to apply the requirements of ASU 2014-15 in its annual financial statements for the year ended December 31, 2016 and its interim financial statements beginning in the first quarter of fiscal 2017. With respect to the annual financial statements as of December 31, 2017, the Company did not identify any conditions or events that raise substantial doubt about its ability to continue as a going concern within one year after the date the financial statements are issued.

In March 2016, the FASB issued ASU No. 2016-09, Compensation-Stock Compensation-Improvements to Employee Share-Based Payment Accounting, or ASU 2016-09. This update simplifies several aspects of the accounting for share-based compensation arrangements, including accounting for income taxes, forfeitures and statutory tax withholding requirements as well as classification of related amounts on the statement of cash flows. The Company adopted this ASU on January 1, 2017 and it did not have a material effect on the consolidated financial statements and related disclosures.

In August 2016, the FASB issued ASU No. 2016-15—Classification of Certain Cash Receipts and Cash Payments. The amendments in ASU 2016-15 address eight specific cash flow issues and apply to all entities that are required to present a statement of cash flows under FASB Accounting Standards Codification (ASC) 230, Statement of Cash Flows. The amendments in ASU 2016-15 are effective for public business entities for fiscal years beginning after December 15, 2017, and interim periods within those fiscal years. Early adoption is permitted, including adoption during an interim period. The Company early adopted this update for the interim period ended September 30, 2017 as the treatment of debt extinguishment payments as a financing activity more clearly presents the cash outflow of the extinguishment transaction. No prior period amounts require retrospective adjustments as no debt extinguishments occurred in the prior year. The adoption of ASU 2016-15 resulted in classification of cash payments related to the debt prepayment as cash outflows for financing activities. Additional information concerning the prepayment of the Loan Agreement is discussed further in Note 15.

Pending Accounting Pronouncements

In May 2014, the Financial Accounting Standard Board, or FASB, issued Accounting Standards Update, or ASU, No. 2014-09, Revenue from Contracts with Customers (Topic 606), or ASU 2014-09, which stipulates that an entity should recognize revenue to depict the transfer of promised goods or services to customers in an amount that reflects the consideration to which the entity expects to be entitled in exchange for those goods or services. To achieve this core principle, ASU 2014-09 provides that an entity should apply the following steps: (1) identify the contract(s) with a customer, (2) identify the performance obligations in the contract, (3) determine the transaction price, (4) allocate the transaction price to the performance obligations in the contract and (5) recognize revenue when (or as) the entity satisfies a performance obligation. This update will be effective for the Company beginning in the first quarter of fiscal 2018 as a result of the FASB's one year deferral of the effective date for this standard. The amendments may be applied retrospectively to each prior period (full retrospective) or retrospectively with the cumulative effect recognized as of the date of initial application (modified retrospective). Previously, the Company disclosed that it intended to apply ASU 2014-09 using the full retrospective approach. Due to the additional adoption efforts required of issuers under the full retrospective approach, the Company now intends to adopt ASU 2014-09 in the first quarter of 2018 using the modified retrospective approach. Under the modified retrospective approach, the cumulative effect of applying the standard would be recognized at the date of initial application within retained earnings.

The Company is currently evaluating the effect of adopting the requirements of ASU 2014-09 as it relates to the accounting for its collaboration arrangements with Celgene Pharmaceuticals, Inc., Jazz Pharmaceuticals plc, Glaxo Group Limited and Avanir Pharmaceuticals, Inc., its patent assignment agreement with Auspex Pharmaceuticals, Inc., and its Asset Purchase Agreement with Vertex Pharmaceuticals, Inc.

While the Company is currently evaluating the effect of adopting the requirements of ASU 2014-09, the Company expects, in certain circumstances, that the timing of recognition of contingent payments that may be received under these agreements may change. Contingent payments, including milestone payments and amounts held in escrow under the Asset Purchase Agreement, are treated as variable consideration in accordance with the overall model of ASU 2014-09. Variable consideration may be recognized earlier under ASU 2014-09 than under the current revenue recognition standards, based on an assessment at each reporting date of the probability of achievement of the underlying milestone event or resolution of the related contingency. This assessment may, in certain circumstances, result in the recognition of revenue related to a contingent payment before the underlying milestone event has been achieved or the underlying contingency has been fully resolved.

In comparison to current revenue recognition standards, ASU 2014-09 also requires more robust disclosures, including disclosures related to disaggregation of revenue into appropriate categories, performance obligations, the judgments made in revenue recognition determinations, adjustments to revenue which relate to activities from previous quarters or years, any significant reversals of revenue, and costs to obtain or fulfill contracts.

In connection with the adoption of ASU 2014-09, the Company is evaluating the need for additional internal controls, including controls to monitor the probability of achievement of contingent payments and the pattern of performance of certain performance obligations.

In February 2016, the FASB issued ASU No. 2016-02, Leases (Topic 842), or ASU 2016-02. ASU 2016-02 requires lessees to recognize assets and liabilities on the balance sheet for the rights and obligations created by all leases with terms of more than 12 months. ASU 2016-02 also will require certain qualitative and quantitative disclosures designed to give financial statement users information on the amount, timing, and uncertainty of cash flows arising from leases. ASU 2016-02 will be effective for the Company on January 1, 2019. The Company is currently evaluating the impact ASU 2016-02 will have on its financial statements.

In June 2016, the FASB issued ASU No. 2016-13, Financial Instruments-Credit Losses (Topic 326)-Measurement of Credit Losses on Financial Instruments, or ASU 2016-13. The new standard requires entities to measure all expected credit losses for financial assets held at the reporting date based on historical experience, current conditions and reasonable and supportable forecasts. ASU 2016-13 will become effective for the Company for fiscal years beginning after December 15, 2019, with early adoption permitted. The Company is currently evaluating the impact ASU 2016-13 will have on its financial statements and related disclosures.

In November 2016, the FASB issued ASU 2016-18, Statement of Cash Flows - Restricted Cash (Topic 230). This new standard requires companies to include amounts generally described as restricted cash and restricted cash equivalents in cash and cash equivalents when reconciling beginning-of-period and end-of-period total amounts shown on the statement of cash flows. This guidance is effective for annual and interim reporting periods beginning after December 15, 2017, and requires retrospective application. The Company is currently assessing the impact that adopting ASU 2016-18 will have on its consolidated financial statements and related disclosures.

3. Fair Value Measurements

The tables below present information about the Company's financial assets and liabilities that are measured and carried at fair value as of December 31, 2017 and 2016 (in thousands) and indicate the level within the fair value hierarchy where each measurement is classified.

	Level 1	Level 2	Level 3	Total
December 31, 2017				
Cash equivalents:				
Money market funds	$ 8,108	$ —	$ —	$ 8,108
Investments, available for sale:				
U.S. Treasury obligations	53,910	—	—	53,910
Government agency securities	88,651	32,939	—	121,590
Total	$ 150,669	$ 32,939	$ —	$ 183,608

	Level 1	Level 2	Level 3	Total
December 31, 2016				
Cash equivalents:				
Money market funds	$ 26,257	$ —	$ —	$ 26,257
U.S. Treasury obligations	—	1,001	—	1,001
Investments, available for sale:				
U.S. Treasury obligations	10,034	5,503	—	15,537
Government agency securities	24,545	15,548	—	40,093
Total	$ 60,836	$ 22,052	$ —	$ 82,888

4. Cash, Cash Equivalents and Investments, Available for Sale

Cash, cash equivalents and investments, available for sale included the following at December 31, 2017 and December 31, 2016 (in thousands):

	Average maturity	Amortized cost	Unrealized gains	Unrealized losses	Fair value
December 31, 2017					
Cash		$ 19,557	$ —	$ —	$ 19,557
Money market funds		8,108	—	—	8,108
Cash and cash equivalents		$ 27,665	$ —	$ —	$ 27,665
U.S. Treasury obligations	184 days	$ 54,004	$ —	$ (94)	$ 53,910
Government agency securities	229 days	121,903	—	(313)	121,590
Investments, available for sale		$ 175,907	$ —	$ (407)	$ 175,500

	Average maturity	Amortized cost	Unrealized gains	Unrealized losses	Fair value
December 31, 2016					
Cash		$ 13,297	$ —	$ —	$ 13,297
Money market funds		26,257	—	—	26,257
U.S. Treasury obligations	31 days	1,001	—	—	1,001
Cash and cash equivalents		$ 40,555	$ —	$ —	$ 40,555
U.S. Treasury obligations	125 days	$ 15,534	$ 4	$ (1)	$ 15,537
Government agency securities	140 days	40,103	1	(11)	40,093
Investments, available for sale		$ 55,637	$ 5	$ (12)	$ 55,630

5. Restricted Cash

At December 31, 2017 and 2016, restricted cash was $1.6 million and $0.4 million, respectively. The restricted cash as of December 31, 2017 and 2016 is held as collateral for stand-by letters of credit issued by the Company to its landlords in connection with the leases of the Company's Lexington, Massachusetts facilities. For additional information regarding the Company's leases, please reference Note 11.

6. Property and Equipment

Property and equipment consists of the following at December 31, 2017 and 2016 (in thousands):

	Estimated useful life (in years)	December 31, 2017	December 31, 2016
Laboratory equipment	5	$ 2,674	$ 2,128
Computer, telephone and office equipment	3	147	207
Software	3	160	192
Leasehold improvements	Lesser of useful life or remaining lease term	6,551	6,548
		9,532	9,075
Less accumulated depreciation and amortization		(7,367)	(6,876)
		$ 2,165	$ 2,199

Depreciation and amortization expense was charged to operations in the amounts of $1.0 million, $0.9 million, and $0.8 million for the years ended December 31, 2017, 2016, and 2015, respectively.

7. Accrued Expenses and Other Liabilities

Accrued expenses and other liabilities consist of the following (in thousands):

	December 31, 2017	December 31, 2016
Accrued professional fees and other	$ 628	$ 487
Employee compensation and benefits	2,797	2,010
Research and development expenses	521	930
Deferred lease incentive, current portion	249	324
Deferred rent, current portion	104	102
	$ 4,299	$ 3,853

8. Stock Compensation

Stock incentive plans

The Company previously sponsored an Amended and Restated 2006 Stock Option and Grant Plan, or the 2006 Plan, which provided for the issuance of shares of common stock in the form of incentive stock options, nonstatutory stock options, awards of stock and direct stock purchase opportunities to directors, officers, employees and consultants of the Company. The 2006 Plan was replaced by the Company's 2014 Stock Incentive Plan, or the 2014 Plan, which became effective in February 2014. The 2014 Plan provides for the grant of incentive stock options, nonstatutory stock options, restricted stock awards, restricted stock units, stock appreciation rights and other stock-based awards. In addition, the 2014 Plan includes an "evergreen provision" that allows for an annual increase in the number of shares of common stock available for issuance under the 2014 Plan. Effective January 1, 2018, 925,615 shares were added to the 2014 Plan for future issuance pursuant to this evergreen provision.

The 2006 Plan has no shares remaining available for grant, although existing stock options granted under the 2006 Plan remain outstanding. As of December 31, 2017, 1,312,806 shares were available for future grant under the 2014 Plan.

Stock options

Stock options are granted with an exercise price equal to the closing market price of the Company's common stock on the date of grant. Stock options generally vest ratably over three or four years and have contractual terms of ten years. Stock options are valued using the Black-Scholes-Merton option valuation model and compensation cost is recognized based on such fair value over the period of vesting.

The following table provides certain information related to the Company's outstanding stock options:

	Year ended December 31,		
	2017	2016	2015
	(in thousands, except per share data)		
Weighted average fair value of options granted, per option	$ 7.67	$ 10.42	$ 10.27
Aggregate grant date fair value of options vested during the year	$ 6,212	$ 4,614	$ 3,470
Total cash received from exercises of stock options	$ 6,576	$ 601	$ 1,844
Total intrinsic value of stock options exercised	$ 8,692	$ 1,160	$ 9,126

The weighted average fair value of options granted in the years ended December 31, 2017, 2016 and 2015, reflect the following weighted-average assumptions:

	Year ended December 31,		
	2017	2016	2015
Expected volatility	78.15%	78.29%	73.38%
Expected term	6.0 years	6.0 years	6.0 years
Risk-free interest rate	2.07%	1.36%	1.69%
Expected dividend yield	—%	—%	—%

Expected volatility. For the year ended December 31, 2017, expected volatility was estimated using a weighted-average of the Company's historical volatility of its common stock and the historical volatility of the common stock of a representative group of publicly traded companies from the biopharmaceutical industry with similar characteristics as the Company, including stage of product development and therapeutic focus. The Company will continue to apply this process until a sufficient amount of historical information regarding the volatility of its own stock price becomes available.

For year ended December 31, 2016 and 2015, the Company estimated expected volatility using only the historical volatility from a representative group of publicly traded companies from the biopharmaceutical industry with similar characteristics including stage of product development and therapeutic focus.

Expected term. The expected term of awards represents the period of time that the awards are expected to be outstanding. The expected term was determined using the simplified method as prescribed by the Securities and Exchange Commission Staff Accounting Bulletin No. 107, *Share-Based Payment* as the Company does not have sufficient historical exercise data to provide a reasonable basis upon which to estimate the expected term of stock options granted to employees.

Risk-free interest rate. For the years ended December 31, 2017, 2016 and 2015, the risk-free interest rate was estimated using an average of treasury bill interest rates over a period commensurate with the expected term of the option at the time of grant.

Expected dividend yield. The expected dividend yield is zero as the Company has not paid any dividends to date and has no current intention of paying cash dividends.

Forfeiture rate. The Company elected to estimate potential forfeiture of stock grants and adjust compensation cost recorded accordingly. The estimate of forfeitures is adjusted over the requisite service period to the extent that actual forfeitures differ, or are expected to differ, from such estimates. Changes in estimated forfeitures are recognized through a cumulative catch-up in the period of change and impact the amount of stock compensation expense to be recognized in future periods. For the years ended December 31, 2017, 2016 and 2015, the Company assumed forfeiture rates of approximately 7%, 6%, and 6%, respectively.

The following is a summary of option activity under the 2006 Plan and 2014 Plan:

	Number of Option Shares	Weighted Average Exercise Price per Share	Weighted Average Remaining Contractual Term	Aggregate Intrinsic Value
			(In years)	(In thousands)
Outstanding at December 31, 2016	2,953,961	$ 10.49		
Granted	1,065,500	$ 11.25		
Exercised	(828,263)	$ 8.06		
Forfeited or expired	(301,476)	$ 12.48		
Outstanding at December 31, 2017	2,889,722	$ 11.25	7.06	42,241
Exercisable at December 31, 2017	1,607,015	$ 10.11	6.09	25,320
Vested and expected to vest at December 31, 2017 (1)	2,784,591	$ 11.21	7.01	40,826

(1) This represents the number of vested stock option shares as of December 31, 2017, plus the number of unvested stock option shares that the Company estimated as of December 31, 2017 would vest, based on the unvested stock option shares at December 31, 2017 and an estimated forfeiture rate of 7%.

As of December 31, 2017 there was $9.9 million of total unrecognized compensation cost related to stock options that are expected to vest. Total unrecognized compensation cost will be adjusted for future changes in forfeitures. The stock option costs are expected to be recognized over a weighted-average remaining vesting period of 2.3 years.

Restricted Stock units

On July 6, 2017, the Company granted 0.5 million RSUs to executives and employees. The awards granted to employees are service-based whereas the awards granted to executives are a blend of service-based and performance-based. Assuming all service and performance conditions are achieved, fifty percent of the RSUs will vest on March 31, 2018, and the remaining fifty percent of the RSUs will vest on March 31, 2019. Certain executive awards are subject to the achievement of defined performance criteria prior to March 31, 2018, including the closing of the transaction contemplated by the Asset Purchase Agreement with Vertex Pharmaceuticals, Inc. and the institution by the Patent Trial and Appeal Board ("PTAB") of the Post Grant Review ("PGR") petition filed by the Company against Incyte Corporation. The Company is using the accelerated attribution method to recognize expense over the required service period based on its estimate of the number of performance-based awards that will vest. Upon the closing of the transaction contemplated by the Asset Purchase Agreement with Vertex, the Company deemed the corresponding performance criteria achieved and recognized expense over the remaining vesting period. In January 2018, the PTAB decided not to institute a PGR petition proceeding against Incyte and, as a result, the corresponding performance criteria is considered unachieved as of December 31, 2017. No stock compensation expense was taken on these awards. If there is a change in the estimate of the number of performance-based awards that are probable of vesting, the Company will cumulatively adjust compensation expense in the period that the change in estimate is made.

RSUs are not included in issued and outstanding common stock until the shares are vested and released. As of December 31, 2017, no RSUs had vested. The fair value of an RSU is measured based on the market price of the underlying common stock as of the date of grant, reduced by the purchase price of $0.001 per share. For the year ended December 31, 2017, the weighted-average grant date fair value of RSUs is $13.87.

The following is a summary of RSU activity, including both time-based and performance-based restricted stock units for the year ended December 31, 2017:

	Number of RSU Shares	Weighted Average Grant Date Fair Value
Outstanding at December 31, 2016	—	$ —
Granted	520,500	$ 13.87
Released	—	$ —
Forfeited	(3,200)	$ 13.87
Outstanding at December 31, 2017	517,300	$ 13.87

As of December 31, 2017, there was $3.8 million of unrecognized compensation cost related to restricted stock units that are expected to vest. This amount excludes compensation cost related to restricted stock units where the performance conditions are not considered probable of being satisfied. The costs from restricted stock units likely to vest are expected to be recognized over a weighted average remaining vesting period of 1.0 year.

Stock-based compensation expense

Total compensation cost recognized for all stock-based compensation awards in the consolidated statements of operations and comprehensive income (loss) is as follows (in thousands):

	For the Year Ended December 31,		
	2017	2016	2015
Research and development	$ 3,708	$ 2,147	$ 1,251
General and administrative	4,792	2,920	1,730
Total stock-based compensation expense	$ 8,500	$ 5,067	$ 2,981

9. Earnings (Loss) Per Share

The Company has outstanding warrants, including those issued in connection with the Loan and Security Agreement described in Note 15, that are deemed to be participating securities. Accordingly, the Company applied the two-class method to calculate basic and diluted net earnings per share of common stock for the year ended December 31, 2017. The two-class method is an earnings allocation formula that treats a participating security as having rights to earnings that otherwise would have been available to common stockholders. The two-class method was not applied for the years ended December 31, 2016 and 2015 as the Company's participating securities do not have any obligation to absorb net losses and the effect did not have a material impact on the earnings per share.

Basic net earnings (loss) per common share is calculated by dividing net income (loss) allocable to common stockholders by the weighted-average common shares outstanding during the period, without consideration of common stock equivalents.

For periods with net income, diluted net earnings per share is calculated by either (i) adjusting the weighted-average shares outstanding for the dilutive effect of common stock equivalents, including warrants, stock options and restricted stock units outstanding for the period as determined using the treasury stock method or (ii) the two-class method considering common stock equivalents, whichever is more dilutive.

For purposes of the diluted net loss per share calculation, common stock equivalents are excluded from the calculation if their effect would be anti-dilutive. As such, basic and diluted net loss per share applicable to common stockholders are the same for periods with a net loss.

The following table illustrates the determination of earnings (loss) per share for each period presented.

	For the Year Ended December 31,		
	2017	2016	2015
Basic Earnings per Share	(in thousands, except per share amounts)		
Numerator:			
Net income (loss)	$ 95,639	$ (50,720)	$ 24,174
Income attributable to participating securities - basic	444	—	—
Income (loss) attributable to common stockholders - basic	95,195	(50,720)	24,174
Denominator:			
Weighted average shares outstanding	22,641	22,233	21,152
Net income (loss) per share applicable to common stockholders - basic	$ 4.20	$ (2.28)	$ 1.14
Diluted Earnings per Share			
Numerator:			
Net income (loss)	95,639	(50,720)	24,174
Income attributable to participating securities - diluted	429	—	—
Income (loss) attributable to common stockholders - diluted	95,210	(50,720)	24,174
Denominator:			
Weighted average shares outstanding	22,641	22,233	21,152
Dilutive impact from:			
Stock options	688	—	1,105
Warrants	—	—	10
Restricted stock units	113	—	—
Weighted average shares outstanding - diluted	23,442	22,233	22,267
Net income (loss) per share applicable to common stockholders - diluted	$ 4.06	$ (2.28)	$ 1.09
Anti-dilutive potential common stock equivalents excluded from the calculation of net income (loss) per share:			
Stock options	1,833	620	429
Restricted stock units	408	—	—
Warrants	—	71	61

10. Income Taxes

New Tax Legislation

On December 22, 2017, the President of the United States signed into law the Tax Cuts and Jobs Act ("TCJA"). This legislation makes broad and complex changes to the U.S. tax code, including, but not limited to, (i) reducing the U.S. federal statutory tax rate from 35% to 21%; (ii) eliminating the corporate alternative minimum tax (AMT) and changing how existing AMT credits can be realized; (iii) modifying the officer's compensation limitation, and (iv) changing rules related to uses and limitations of net operating loss carryforwards created in tax years beginning after December 31, 2017. Specifically, the TCJA limits the amount the Company is able to deduct for net operating loss carryforwards generated in taxable years beginning after December 31, 2017 to 80% of taxable income however these net operating loss carryforwards can be carried forward indefinitely.

The Company recognizes the effects of changes in tax law, including the TCJA, in the period the law is enacted. Accordingly, the effects of the TCJA have been recognized in the financial statements for the year ended December 31, 2017. As a result of the change in law, the Company recorded a reduction to its deferred tax assets of $8.6 million and a corresponding reduction to its valuation allowance due to the reduction in the U.S. federal statutory rate from 35% to 21%.

In addition, the new legislation has also repealed the corporate Alternative Minimum Tax ("AMT") for years after 2017. Corporations that were previously subject to the AMT and therefore have AMT tax credit carryforwards as of December 31, 2017, are eligible for a refund of these credits for tax years beginning after 2017 and before 2022. The Company is subject to AMT in the amount of $1.9 million in 2017. Since the AMT payable in 2017 will generate an AMT credit that will be refundable between 2018 and 2022, the Company has recorded a $1.9 million income tax receivable rather than a tax expense for 2017. Further, the Company also has a deferred tax asset for its AMT credit carryforward related to its AMT liability paid in 2015 in the amount of $0.3 million. This deferred tax asset was previously offset by a full valuation allowance. As a result of the change in law, the Company has reclassified the 2015 AMT credit carryforward from deferred tax assets to income tax receivable. The Company has recorded a current period tax benefit of $0.3 million related to the reversal of the valuation allowance on its 2015 AMT credit carryforward as this amount is now refundable.

At December 31, 2017, the Company has not completed its accounting for the tax effects of the enactment of the TCJA; however in certain cases we have made a reasonable estimate of the effects of the TCJA. For the items for which we were able to determine a reasonable estimate, we recorded an $8.6 million reduction to deferred tax assets with an offset to valuation allowance and recognized a provisional benefit for income taxes of $0.3 million for the year ended December 31, 2017. The Company's preliminary estimate of the effects TCJA, including the remeasurement of deferred tax assets and liabilities and the recognition of an income tax benefit related to AMT tax credit carryforwards, is subject to the finalization of management's analysis related to certain matters, such as developing interpretations of the provisions of the TCJA and the filing of the Company's tax returns. U.S. Treasury regulations, administrative interpretations or court decisions interpreting the TCJA may require further adjustments and changes in our estimates. The final determination of the effects of the TCJA will be completed as additional information becomes available, but no later than one year from the enactment of the TCJA. In all cases, we will continue to make and refine our calculations as additional analysis is completed. In addition, our estimates may also be affected as we gain a more thorough understanding of the tax law.

Income Taxes

During the year ended December 31 2017, the Company recorded net income before taxes of $95.3 million. As a result of the enactment of the TCJA, which allows for AMT to be refundable, the Company recorded a tax receivable of $2.2 million as of December 31, 2017 and a $0.3 million income tax benefit during the year ended December 31, 2017. The tax benefit is the result of the removal of its valuation allowance on its AMT credit carryforward as previously described. Income taxes that would otherwise have been due on the 2017 taxable income were offset with the tax benefit of net operating loss carryforwards which had previously had a full valuation allowance, except for $1.9 million of AMT incurred due to the limitation on use of net operating loss carryforwards when determining AMT. However, the 2017 AMT is also refundable under the Tax Cuts and Jobs Act of 2017 and thus we have not recorded a tax provision for this amount. The total amount of refundable AMT credits of $2.2 million is reflected as income tax receivable in the accompanying consolidated balance sheet as of December 31, 2017. We provide a full valuation allowance for any tax benefit related to net operating losses due to the uncertainty of the ability to realize such benefits.

During the year ended December 31, 2016, the Company recorded a net loss of $50.7 million and, since it maintained a full valuation allowance on its deferred tax assets, the Company did not record an income tax benefit for the year ended December 31, 2016. The Company recorded $0.4 million in income tax expense during the year ended December 31, 2015. The tax expense is the result of alternative minimum tax ("AMT") which, in accordance with the U.S. federal tax code as of December 31, 2015, limited the use of net operating loss carryforwards to ninety percent of AMT income resulting in an effective tax rate of approximately two percent.

The Company's ability to use its operating loss carryforwards and tax credit carryforwards to offset taxable income is subject to restrictions under Sections 382 and 383 of the United States Internal Revenue Code (the "Internal Revenue Code"). Net operating loss and tax credit carryforwards are subject to an annual limitation in the event of certain cumulative changes in the ownership interest of significant shareholders over a three-year period in excess of 50 percent, as defined under Sections 382 and 383 of the Internal Revenue Code. Such changes would limit the Company's use of its operating loss and tax credit carryforwards. In such a situation, the Company may be required to pay income taxes, even though significant operating loss and tax credit carryforwards exist. Additionally, any future financing could result in a change in control, as defined by Sections 382 and 383, which could further limit the Company's use its operating loss and tax credit carryforwards. In determining the tax provisions for fiscal years 2017 and 2015, we assessed our ability to use our net operating loss carryforwards in accordance with Sections 382 and 383 of the Internal Revenue Code.

A reconciliation of the federal statutory income tax rate and the Company's effective income tax rate is as follows:

	Year ended December 31,		
	2017	2016	2015
Federal statutory income tax rate	(35.0)%	34.0 %	(34.0)%
State income taxes	(5.1)%	4.5 %	(5.3)%
Change in valuation allowance	46.2 %	(40.3)%	32.6 %
Research and development and other credits	2.5 %	3.1 %	7.8 %
Permanent items	0.8 %	(1.0)%	(0.3)%
Alternative minimum tax	— %	— %	(1.7)%
Other	— %	(0.3)%	(0.8)%
Federal rate change	(9.1)%	— %	— %
Effective income tax rate	0.3 %	— %	(1.7)%

The significant components of the Company's net deferred tax assets consist of the following (in thousands):

	December 31,	
	2017	2016
Net operating loss carryforwards	$ 11,670	$ 53,809
Deferred revenue	2,733	3,948
Research and development and other credit carryforwards	13,399	10,791
Other	3,811	3,851
	31,613	72,399
Valuation allowance	(31,613)	(72,399)
Net deferred tax assets	$ —	$ —

Subject to the limitations described above and the impacts of the TCJA, at December 31, 2017, the Company had gross federal net operating loss carryforwards of $54.9 million and state net operating loss carryforwards of $2.2 million available to reduce future taxable income, which expire at various dates beginning in 2028. The Company also had federal and state tax credit carryforwards of $9.9 million and $4.3 million, respectively, available to reduce future tax liabilities, which expire at various dates through 2037.

The Company adopted ASU 2016-09, Improvements to Employee Share-Based Payment Accounting on January 1, 2017. As a result of adoption, the deferred tax assets associated with net operating losses as of December 31, 2016 have increased by $3.2 million. These amounts were offset by a corresponding increase in the valuation allowance. The adoption of ASU 2016-09 has no impact on the Company's operations, financial position or cash flows.

Realization of the future tax benefits is dependent on many factors, including the Company's ability to generate taxable income within the carryforward period. The Company has evaluated the positive and negative evidence bearing upon the realizability of its deferred tax assets and concluded that it is more likely than not that the Company will not realize the benefit of its deferred tax assets. As a result, the deferred tax assets have been fully reserved at December 31, 2017 and 2016.

At December 31, 2017, the Company had no unrecognized tax benefits. The Company has not conducted a study of its research and development credit carryforwards. A study may result in an adjustment to the Company's research and development credit carryforwards; however, until a study is completed and any adjustment is known, no amounts will be presented as an uncertain tax position. A full valuation allowance has been provided against the Company's research and development credit carryforwards and, if an adjustment is required, this adjustment would be offset by an adjustment to the valuation allowance. Thus, there would be no impact to the consolidated balance sheet or statement of operations if an adjustment were required.

Interest and penalty charges, if any, related to unrecognized tax benefits would be classified as income tax expense in the accompanying statement of operations. As of December 31, 2017, the Company had no accrued interest related to uncertain tax positions.

The Company is currently open to examination under the statute of limitations by the Internal Revenue Service and state jurisdictions for the tax years ended 2014 through 2016. Carryforward tax attributes generated in years prior to 2011 may still be adjusted upon future examination if they have or will be used in a future period. The Company is currently not under examination by the Internal Revenue Service or any other jurisdictions for any tax years. Since the Company is in a loss carryforward position, the Company is generally subject to examination by the U.S. federal, state and local income tax authorities for all tax years in which a loss carryforward is available.

11. Commitments

The Company currently leases approximately 50,000 square feet of office and laboratory space in Lexington, Massachusetts under a non-cancelable operating lease agreement, or the 2008 Lease Agreement, as amended. The term of the 2008 Lease Agreement continues through September 30, 2018.

The Company is amortizing all leasehold improvement assets and deferred incentives associated with the 2008 Lease Agreement over the remaining lease term, as amended, and is recognizing rental expense on a straight-line basis over the respective lease term including any free rent periods.

In December 2017, the Company entered into an non-cancelable operating lease agreement (the "2017 Lease Agreement" or the "Lease") to lease 55,522 square feet of office and laboratory space in a new location in Lexington, Massachusetts (the "Premises"). The Company expects to occupy the Premises in July 2018. The Lease term will extend ten years following the "Base Rent Commencement Date" (as defined in the Lease), currently expected to be January 1, 2019. The Company is entitled to two five-year options to extend the Lease. The Lease will be accounted for as an operating lease.

The Lease provides for annual base rent of approximately $2.8 million in the first year following the Base Rent Commencement Date of January 1, 2019, which increases on a yearly basis by 3.0% (subject to an abatement of base rent of approximately $0.5 million at the beginning of the second year of the Lease term if the Company is not in default under the Lease). The Company will also be obligated to pay the Landlord for certain costs, taxes and operating expenses related to the Premises, subject to certain exclusions. The Company is recognizing rental expense on a straight-line basis, beginning on the lease commencement date of January 1, 2018, over the term of the lease with corresponding rent differential accounted for as deferred rent.

The Company will be entitled to an improvement allowance of approximately $5.0 million for certain permitted costs related to the design and construction of Company improvements to the Premises. The Company is accounting for the tenant improvements as a lease incentive obligation to be amortized against operating lease expense on a straight-line basis over the term of the Lease. The leasehold improvements will be recognized as assets and amortized on a straight-line basis over the term of the Lease.

The Company is obligated to provide a security deposit in the amount of approximately $1.2 million, which may be used by the Landlord to be applied for certain purposes upon the Company's breach of any provisions under the Lease.

The Lease contains customary provisions allowing the Landlord to terminate the Lease if the Company fails to remedy a breach of any of its obligations within specified time periods, or upon bankruptcy or insolvency of the Company.

The future minimum lease payments under the 2008 Lease Agreement, as amended, and the 2017 Lease Agreement is as follows (in thousands):

	Base rent obligations
At December 31, 2017	
2018	$ 1,208
2019	2,776
2020	2,383
2021	2,945
2022	3,034
Greater than 5 years	20,210
Total minimum lease payments	$ 32,556

12. Collaboration Agreements

Celgene

In April 2013, the Company entered into a master development and license agreement with Celgene Corporation and Celgene International Sàrl, referred to together as Celgene, which is primarily focused on the research, development and commercialization of specified deuterated compounds targeting inflammation or cancer.

The initial program in the collaboration is CTP-730, a deuterium-modified analog of apremilast. Celgene has an exclusive worldwide license to develop, manufacture and commercialize deuterated analogs of apremilast and certain close chemical derivatives thereof. The Company further granted Celgene licenses with respect to two additional programs and an option with respect to a third additional program.

The Company was responsible for conducting and funding research and early development activities for the CTP-730 program at its own expense pursuant to mutually agreed upon development plans. This included the completion of single and multiple ascending dose Phase 1 clinical trials in 2015.

Under the terms of the agreement, the Company received a non-refundable upfront payment of $35.0 million. In October 2015, the Company earned and recognized as milestone revenue an $8.0 million development milestone payment upon completion of Phase 1 clinical evaluations for CTP-730. In addition, the Company is eligible to earn an additional $15.0 million development milestone payment, up to $247.5 million in regulatory milestone payments and up to $50.0 million in sales-based milestone payments related to products within the CTP-730 program. The next milestone payment the Company may be entitled to achieve under the CTP-730 program is $15.0 million related to the first actual dosing in a Phase 3 clinical trial or, if earlier, acceptance for filing of a NDA. If Celgene exercises its rights with respect to either of the two additional license programs, the Company will receive a license exercise fee for the applicable program of $30.0 million and will also be eligible to earn up to $23.0 million in development milestone payments and up to $247.5 million in regulatory milestone payments for that program. Additionally, with respect to one of the additional license programs, the Company is eligible to receive up to $100.0 million in milestone payments based on net sales of products, and with respect to the other additional license program, the Company is eligible to receive up to $50.0 million in milestone payments based on net sales of products. If Celgene exercises its option with respect to the option program, in respect of a compound to be identified at a later time, the Company will receive an option exercise fee of $10.0 million and will be eligible to earn up to $23.0 million in development milestone payments and up to $247.5 million in regulatory milestone payments.

In addition, with respect to each program, Celgene is required to pay the Company royalties on worldwide net sales of each licensed product at defined percentages ranging from the mid-single digits to low double digits below 20%. The royalty rate is reduced on a country-by-country basis during any period within the royalty term when there is no patent claim or regulatory exclusivity covering the licensed product in the particular country.

The Company's arrangement with Celgene contains the following deliverables: (i) an exclusive worldwide license to develop, manufacture and commercialize deuterated analogs of apremilast related to the CTP-730 program, or the License Deliverable, (ii) obligations to perform research and development services associated with the CTP-730 program, or the R&D Services Deliverable, (iii) obligation to supply nonclinical and clinical trial material related to the CTP-730 program, or the Supply Deliverable, (iv) participation on the JSC during the term of the CTP-730 program, or the JSC Deliverable, (v) significant and

incremental discount related to the first additional license program for which the non-deuterated compound has been selected, or the First Discount Deliverable and (vi) significant and incremental discount related to the second additional license program for which the non-deuterated compound has been selected, or the Second Discount Deliverable.

Allocable arrangement consideration at inception was limited to the $35.0 million non-refundable upfront payment. The Company allocated the arrangement consideration for the collaboration among the separate units of accounting using the relative selling price method. The arrangement consideration allocated to the License Deliverable was recognized upon delivery, amounts allocated to the R&D Services Deliverable and Supply Deliverable are recognized under the proportional performance method over the expected period of performance.

During the years ended December 31, 2017, 2016 and 2015, the Company recognized revenue of $2 thousand, $19 thousand, and $5.1 million for the R&D Services Deliverable and $18 thousand, $43 thousand, and $0.5 million for the Supply Deliverable, respectively. Additionally, the Company recognized revenue of $16 thousand, and $32 thousand related to the JSC deliverable during the years ended December 31, 2016 and 2015, respectively. The JSC Deliverable expected period of performance extended until December 31, 2016 therefore no revenue was recognized during 2017. The revenue recognized was classified as license and research and development revenue in the accompanying consolidated statement of operations and comprehensive income (loss).

As of December 31, 2017, there was $7.2 million of deferred revenue related to the Company's collaboration with Celgene.

Jazz Pharmaceuticals

In February 2013, the Company entered into a development and license agreement with Jazz Pharmaceuticals, Inc., or Jazz Pharmaceuticals, to research, develop and commercialize products containing a deuterated sodium oxybate analog, or D-SXB. Jazz Pharmaceuticals is initially focusing on one analog, designated as JZP-386. Under the terms of the agreement, the Company granted Jazz Pharmaceuticals an exclusive, worldwide, royalty-bearing license under intellectual property controlled by the Company to develop, manufacture and commercialize D-SXB products including, but not limited to, JZP-386.

The Company, together with Jazz Pharmaceuticals, has conducted certain development activities for Phase 1 clinical trials with respect to JZP-386 pursuant to an agreed upon development plan. The Company was responsible under the development plan for conducting the Phase 1 clinical trials with respect to JZP-386. The Company's obligations to conduct further development activities are subject to mutual agreement. Jazz Pharmaceuticals has assumed all manufacturing and development responsibilities relating to JZP-386. Pursuant to the agreement, the Company's costs for activities under the development plan were reimbursed by Jazz Pharmaceuticals, except for the costs of a Phase 1 clinical trial that was conducted in the first half of 2015, which was shared between Jazz Pharmaceuticals and the Company.

Under the agreement, the Company received a non-refundable upfront payment of $4.0 million and is eligible to earn an aggregate of up to $8.0 million in development milestone payments, up to $35.0 million in regulatory milestone payments and up to $70.0 million in sales-based milestone payments based on net product sales of licensed products. The next milestone payment that the Company may be entitled to receive is $4.0 million related to initiation of the first Phase 2 clinical trial of JZP-386.

In addition, Jazz Pharmaceuticals is required to pay the Company royalties at defined percentages ranging from the mid-single digits to low double digits below 20% on worldwide net sales of licensed products. The royalty rate is lowered, on a country-by-country basis, under certain circumstances as specified in the agreement.

The Company determined that there were three deliverables under the agreement: (i) an exclusive, royalty-bearing, sub-licensable worldwide license to develop and commercialize D-SXB compounds, or the License Deliverable, (ii) participation on a joint steering committee, or the JSC Deliverable, and (iii) a deliverable to direct external patent activities and bear a portion of the external patent fees, or the Patent Support Deliverable.

The Company allocated arrangement consideration of $3.7 million to the License Deliverable, $0.1 million to the JSC Deliverable and $0.2 million to the Patent Support Deliverable. The Company recognized the arrangement consideration allocated to the License Deliverable upon delivery and will recognize revenue related to the JSC Deliverable and the Patent Support Deliverable over the respective periods of performance.

For the years ended December 31, 2017, 2016 and 2015, the Company recognized revenue of $16 thousand, $55 thousand, and $0.8 million, respectively, related to the performance of development support services. Additionally, for the years ended

December 31, 2017, 2016 and 2015, the Company recognized revenue of $26 thousand, $41 thousand, $57 thousand, respectively, related to the JSC and Patent Support deliverables.

Avanir

In February 2012, the Company entered into a development and license agreement with Avanir Pharmaceuticals, Inc., or Avanir, under which the Company granted Avanir an exclusive worldwide license to develop, manufacture and commercialize deudextromethorphan containing products. Avanir is currently focused on developing AVP-786, which is a combination of a deudextromethorphan and an ultra low dose of quinidine. Subsequent to the Company's agreement, Avanir was acquired by Otsuka Pharmaceutical Co., Ltd. and it is now a wholly owned subsidiary of Otsuka America, Inc.

Since June 2012, Avanir has elected to conduct all research and development activities, including manufacturing activities; however, the Company has received intellectual property cost reimbursements.

Under the agreement, the Company received a non-refundable upfront payment of $2.0 million and has received milestone payments of $6.0 million. The Company is also eligible to earn, with respect to licensed products comprising a combination of deudextromethorphan and quinidine, up to $37.0 million in regulatory and commercial launch milestone payments, of which $21.5 million in development and regulatory milestone payments are associated with the first indication, and up to $125.0 million in sales-based milestone payments. The next milestone payments that the Company may be entitled to receive are $5.0 million upon acceptance for filing of a New Drug Application, or NDA, $3.0 million upon acceptance for filing of a Marketing Authorization Application, or MAA, and $1.5 million upon acceptance for filing of a NDA by the MHLW related to AVP-786. In addition, the Company is eligible for higher development milestones, up to an additional $43.0 million, for licensed products that do not require quinidine. Avanir is currently developing deudextromethorphan in combination with quinidine.

Avanir also is required to pay the Company royalties at defined percentages ranging from the mid-single digits to low double digits below 20% on net sales of licensed products on a country-by-country basis. The royalty rate is reduced, on a country-by-country basis, during any period within the royalty term when there is no patent claim covering the licensed product in the particular country.

During the year ended December 31, 2015, the Company recognized as revenue a $2.0 million milestone payment received from Avanir based on the initiation of dosing in a Phase 3 clinical trial of AVP-786.

Additionally, the Company recognized revenue of $0.1 million for intellectual property cost reimbursements during the year ended December 31, 2015.

GSK

In May 2009, the Company entered into a research and development collaboration and license agreement with Glaxo Group Limited, or GSK, to research, develop and commercialize multiple products containing deuterated compounds, including CTP-499. The agreement with GSK, as subsequently amended, expired in May 2012 after GSK opted out of further development under the agreement and made a $2.8 million payment to the Company. The Company has an obligation to make a payment to GSK of up to $2.8 million if the Company commercializes CTP-499 or if the Company receives cash proceeds from re-licensing or transferring the rights to the CTP-499 program. The $2.8 million payment was classified as deferred revenue and will not be recognized as revenue until all repayment obligations lapse.

13. Patent Assignment

In September 2011, the Company entered into a patent assignment agreement with Auspex Pharmaceuticals, Inc., or Auspex, pursuant to which the Company assigned to Auspex a U.S. patent application relating to deuterated pirfenidone analogs. Under the terms of the agreement, the Company is eligible to receive certain royalty payments, or the Royalty Payments, equal to a percentage in the low single digits of net sales in the United States invoiced by Auspex or any of its affiliates, with respect to certain pharmaceutical products containing a deuterated pirfenidone analog. The patent assignment agreement further provides that if Auspex sells to another party all of its U.S. rights to certain deuterated pirfenidone products, or if Auspex grants to another party a license to sell certain deuterated pirfenidone products in the United States, the Company will receive an amount, or the Sublicense/Sale Payments, equal to a percentage in the teens of any proceeds Auspex receives therefrom that are attributable to the rights to such deuterated pirfenidone products in the United States. In addition, the patent assignment agreement provides that if Auspex is acquired in a change in control transaction at any time while it, or any of its affiliates, own certain patents or patent applications related to deuterated pirfenidone, the Company will receive within a specified period

following the closing of the transaction 1.44% of any proceeds payable as consideration for the change in control transaction, including any amounts paid to stockholders and certain equity holders of Auspex. Any such change in control payment to the Company is credited to Auspex as a deduction against any future Royalty Payments and Sublicense/Sale Payments that may become due under the agreement, such that Auspex will not be required to make further Royalty Payments and Sublicense/Sale Payments to the Company until the aggregate amount of such Royalty Payments and Sublicense/Sale Payments exceeds the amount of such change in control payment. The patent assignment agreement expires upon the earlier to occur of (1) receipt by the Company of the final Sublicense/Sale Payment arising from (a) the sale of Auspex's U.S. rights to certain deuterated pirfenidone products or (b) Auspex's grant of an exclusive license to sell certain deuterated pirfenidone products in the United States in all indications and fields, or (2) the expiration of the last claim owned by Auspex or any of its affiliates in certain patents or patent applications related to deuterated pirfenidone analogs.

Under the agreement, Concert became eligible to receive a one-time payment of $50.2 million, which was received in June 2015, due to Teva Pharmaceutical Industries Ltd.'s acquisition of Auspex in May 2015. Due to the stage of development of any deuterated pirfenidone products and the considerable uncertainty associated with the receipt of any Royalty Payments and Sublicense/Sale Payments under the agreement, the payment of $50.2 million was recorded as other revenue in the consolidated statement of operations and comprehensive income (loss) for the year ended December 31, 2015.

14. Asset Purchase Agreement

On March 3, 2017, the Company and Vertex entered into an Asset Purchase Agreement pursuant to which, subject to the satisfaction or waiver of the conditions therein, the Company sold and assigned to Vertex, CTP-656, now known as VX-561, and other cystic fibrosis assets of the Company. On July 25, 2017, the transaction contemplated by the Asset Purchase Agreement closed and Vertex paid the Company $160 million in cash consideration, with $16 million to be held in escrow. There are no refund provisions with the exception of the amount held in escrow for potential indemnification for a period of eighteen months.

Additionally, upon the achievement of certain milestone events, Vertex has agreed to pay the Company an aggregate of up to $90 million. Of this amount, $50 million will become payable to the Company upon receipt of FDA marketing approval for a combination treatment regimen containing CTP-656, now known as VX-561, for patients with cystic fibrosis, and $40 million will become payable to the Company upon completion of a pricing and reimbursement agreement in the first of the United Kingdom, Germany or France with respect to a combination treatment regimen containing CTP-656 for patients with cystic fibrosis.

Pursuant to the Asset Purchase Agreement, the Company has agreed to indemnify Vertex for certain matters, including breaches of specified representations and warranties, covenants included in the Asset Purchase Agreement and specified tax claims. Representations and warranties, other than certain fundamental representations and warranties, survive for a period of eighteen months following the Closing and the maximum liability of the Company for claims by Vertex related to the breaches of such representations and warranties, with limited exceptions, is limited to the escrow amount, or $16 million. In no event will the aggregate liability of the Company for indemnification exceed the purchase price paid by Vertex, including any milestone payments. Eighteen months after the Closing, any remaining balance in the escrow account not subject to indemnity claims by Vertex will be released to the Company.

The Asset Purchase Agreement with Vertex contains the following deliverables: (i) all rights to develop, manufacture, and commercialize deuterated analogs of Kalydeco related to the CTP-656 program, including all intellectual property, permits and registrations, and records, documentation, and regulatory filings, in addition to an obligation to perform research and testing consulting services to facilitate the transfer of materials, documents, and knowledge up to the close of the Asset Purchase Agreement, referred to as the Transfer of IP Deliverable, and (ii) an obligation to perform certain limited transition services including manufacturing, clinical, regulatory, quality assurance, and intellectual property consulting subsequent to the close of the transaction contemplated by the Asset Purchase Agreement to expedite the advancement of CTP-656 without impacting Vertex's development timeline, referred to as the Transition Services Deliverable.

The Company concluded that the Transfer of IP Deliverable has standalone value because Vertex can fully utilize the underlying intellectual property for its intended purpose without the Transition Services Deliverable. This conclusion considered Vertex's expertise as it relates to the clinical development and manufacturing of cystic fibrosis products that enable Vertex to use the intellectual property for its intended purpose without involvement of the Company. The purpose of the Transition Services Deliverable is to transfer ongoing manufacturing and clinical activities to Vertex and do not otherwise represent Company know-how. Accordingly, each deliverable qualifies as a separate unit of accounting.

The Company determined that neither vendor specific objective evidence (VSOE) of selling price nor third party evidence (TPE) of selling price was available for any of the units of accounting identified as the inception of the arrangement with Vertex. Accordingly, the selling price of each unit of accounting was determined based on the Company's best estimate of selling price (BESP). The Company developed its BESP for the intellectual property under the Transfer of IP Deliverable through a risk adjusted discounted cash flow model of the CTP-656 asset that considered applicable market conditions, probabilities of technical success, relevant entity-specific factors, and factors contemplated in negotiating the agreement. The Company developed BESP for the research and testing consulting services included under the Transfer of IP Deliverable and the services included under the Transition Services Deliverable based on the nature of services to be performed, estimates of the associated effort, and cost of the services adjusted for a reasonable profit margin such that they represented estimated market rates for similar services on standalone basis.

Allocable arrangement consideration at inception was limited to the $144.1 million non-refundable upfront payment. Total allocable arrangement consideration was allocated among the separate units of accounting using the relative selling price method as follows: (i) $143.7 million to the Transfer of IP Deliverable; and (ii) $0.4 million to the Transition Services Deliverable. Given the significant value of the intellectual property under the Transfer of IP Deliverable relative to the limited transition services under the Transition Services Deliverable, changes in the BESP of the intellectual property would not result in a significant change in allocation.

The arrangement consideration allocated to the Transfer of IP Deliverable was recognized upon the close of the transaction contemplated by the Asset Purchase Agreement as all items under that deliverable were delivered on the closing date, whereas amounts allocated to the Transition Services Deliverable are recognized under the proportional performance method over the expected period of performance.

The Company has evaluated each of the milestones that may be received in connection with the Asset Purchase Agreement. Each of the milestones are considered substantive on the basis of the contingent nature of the milestone, specifically reviewing factors such as the scientific, clinical, regulatory and other risks that must be overcome to achieve the milestone as well as the level of effort and investment required. Accordingly, such amounts will be recognized as revenue in full in the period in which the associated milestone is achieved, assuming all other revenue recognition criteria are met. As of December 31, 2017, the Company recognized $143.8 million in revenue with $0.3 million remaining in deferred revenue subject to the completion of transition services provided to Vertex pursuant to the Asset Purchase Agreement.

15. Loan Payable and Warrant to Purchase Redeemable Securities

On December 22, 2011, the Company entered into a Loan and Security Agreement, or the Loan and Security Agreement, with Hercules Technology Growth Capital, Inc., or Hercules. The Loan and Security Agreement provides for aggregate advances of up to $20 million in two tranches. Under the first tranche, the Company obtained an advance on December 22, 2011 totaling $7.5 million, or the December 2011 Advance. Under the second tranche, the Company obtained an advance on March 29, 2012 totaling $12.5 million, or the March 2012 Advance. Each advance made under the Loan and Security Agreement had an interest rate of 8.5%.

On October 1, 2015, the Company made its final payment to Hercules, thereby fulfilling all obligations under the Loan and Security Agreement.

In connection with the Loan and Security Agreement, the Company granted Hercules a warrant, the Warrant, to purchase up to 200,000 shares of Series C Preferred Stock at an exercise price of $2.50 per share which vested immediately upon the December 2011 Advance. Upon the draw of the March 2012 Advance, the Warrant became exercisable for an additional 200,000 shares of Series C Preferred Stock at an exercise price of $2.50 per share. Upon completion of the Company's IPO in February 2014 the Warrant became exercisable for an aggregate of 70,796 shares of the Company's common stock at an exercise price of $14.13 per share.

Pursuant to ASC Topic 480, *Distinguishing Liabilities from Equity*, for periods prior to the Company's IPO the Warrant was classified as a liability and was re-measured to the-then current value at each balance sheet date. The Warrant liability was determined based on Level 3 inputs utilizing the Black-Scholes-Merton option pricing model. On February 19, 2014, upon completion of the IPO, the Warrant converted into a warrant to purchase common stock and the Company reclassified the fair value of the Warrant as of February 19, 2014 to additional paid-in capital and will not be subject to remeasurement in future periods.

On June 8, 2017, the Company entered into a Loan Agreement with Hercules, pursuant to which Hercules agreed to make available to the Company a Term Loan Facility in the amount of $30.0 million, subject to certain terms and conditions. The Company borrowed $30.0 million under the Loan Agreement in one advance. The Company incurred $0.3 million in loan issuance costs paid directly to the lenders, which was offset against the loan proceeds as a loan discount.

The advance under the Loan and Security Agreement bore interest at a variable rate of the greater of 8.55% and an amount equal to 8.55% plus the prime rate of interest minus 4.50%. Through September 7, 2017, the Term Loan Facility had an interest rate of 8.55%. Pursuant to the Loan Agreement, the Company had the option to prepay the principal of the Loan Agreement at any time subject to a prepayment charge; however the prepayment charge was waived upon the completion of the sale of CTP-656 to Vertex, discussed further in Note 14, and the prepayment of the Term Loan Facility after the 90th day following the closing date of the Loan Agreement but prior to the six month anniversary of the closing date of the Loan Agreement.

On September 7, 2017, the Company paid a total of $30.8 million to Hercules, representing the principal, accrued and unpaid interest, fees, costs and expenses outstanding under the Loan Agreement. The payoff amount included a final end of term charge to Hercules in the amount of $0.7 million, reduced from the $1.5 million end of term charge required had the debt been held to maturity. Upon the payment of the $30.8 million pursuant to a payoff letter between the Company and Hercules, all outstanding indebtedness and obligations of the Company owed to Hercules under the Loan Agreement were paid in full, and the Loan Agreement was terminated. As a result of the debt extinguishment, the Company recognized a loss of $1.4 million during the year ended December 31, 2017.

In connection with the entry into the Loan Agreement, the Company issued warrants (the "Warrants") to certain entities affiliated with Hercules, exercisable for an aggregate of 61,273 shares of the Company's common stock at an exercise price of $12.24 per share. The Warrants have a five year term, expiring June 8, 2022, and may be exercised on a cashless basis. The Hercules Warrants had a total relative fair value of $0.5 million upon issuance and were recorded as a debt discount.

Pursuant to ASC Topic 480, Distinguishing Liabilities from Equity and ASC Topic 815, Derivatives and Hedging, the Warrants were classified as equity and were initially measured at relative fair value. Subsequent changes to fair value will not be recognized so long as the instrument continues to be equity classified. To determine the relative fair value, the Company measured the fair value of the Warrants as of June 8, 2017 using the Black-Scholes-Merton option pricing model. The significant assumptions used in estimating the fair value of the Warrants include the volatility of the stock underlying the warrants, risk-free interest rate, and estimated life of the warrant. The Company used the following weighted-average assumptions:

Expected volatility	73.71%
Expected term (in years)	5
Risk-free interest rate	1.75%
Expected dividend yield	—%

Consistent with the Company's weighted-average assumptions used in determining the fair value of options, expected volatility was estimated using a weighted-average of the Company's historical volatility of its common stock and the historical volatility of the common stock of a group of similar companies that were publicly traded.

16. Disgorgement of Profits

On December 28, 2017, the Company received $3.6 million due to a disgorgement of short-swing profits arising from the sales of the Company's stock by a greater than 10% stockholder pursuant to Section 16(b) of the Securities and Exchange Act of 1934. The funds disgorged to the Company were based on a formulaic computation as proscribed by the 1934 Act as a result of security activities that generally fall under the Section 16(b) rules.

The sales of the Company's stock was conducted without the knowledge of the Company, and the disgorgement profits were unrelated to the Company's primary business operations. Furthermore, under Section 16(b) of the Securities and Exchange Act of 1934, the Company was legally entitled to receive the disgorged profits without any corresponding obligations owed by the Company and no shares or other benefits were given to BVF by the Company in exchange for the disgorgement proceeds. As a result, the disgorgement receipt was recognized in other income for the fiscal year ended December 31, 2017.

17. 401(k) Retirement Plan

In January 2008, the Company established the Concert Pharmaceuticals 401(k) Retirement Plan (the 401(k) Plan) in which substantially all of its permanent employees are eligible to contribute a percentage of base wages up to an amount not to exceed an annual statutory maximum. The Company matches 50% of the first 6% of an employee's contributions subject to statutory limits.

The Company made matching contributions under the 401(k) Plan of $0.3 million, $0.3 million and $0.2 million for the years ended December 31, 2017, 2016 and 2015, respectively.

18. Quarterly Financial Information (unaudited)

	Three Months Ended			
	March 31, 2017	June 30, 2017	September 30, 2017	December 31, 2017
	(in thousands, except per share data) (unaudited)			
Revenue	$ 20	$ 15	$ 143,844	$ 12
Operating expenses	13,490	12,992	12,011	12,749
Income (Loss) from operations	(13,470)	(12,977)	131,833	(12,737)
Other income (expense), net	137	(50)	(1,591)	4,194
(Provision) Benefit for income taxes	—	—	(2,177)	2,477
Net income (loss)	$ (13,333)	$ (13,027)	$ 128,065	$ (6,066)
Net income (loss) per share—basic	$ (0.60)	$ (0.58)	$ 5.61	$ (0.26)
Net income (loss) per share - diluted	$ (0.60)	$ (0.58)	$ 5.44	$ (0.26)

	Three Months Ended			
	March 31, 2016	June 30, 2016	September 30, 2016	December 31, 2016
	(in thousands, except per share data) (unaudited)			
Revenue	$ 56	$ 71	$ 26	$ 21
Operating expenses	14,030	13,644	11,494	12,173
Loss from operations	(13,974)	(13,573)	(11,468)	(12,152)
Other income, net	94	132	112	109
Net loss	$ (13,880)	$ (13,441)	$ (11,356)	$ (12,043)
Net loss per share - basic and diluted	$ (0.63)	$ (0.60)	$ (0.51)	$ (0.54)

ITEM 9. Changes in and Disagreements with Accountants on Accounting and Financial Disclosure

None.

ITEM 9A. Controls and Procedures

Evaluation of Disclosure Controls and Procedures

The term "disclosure controls and procedures," as defined in Rules 13a-15(e) and 15d-15(e) under the Securities Exchange Act of 1934, as amended, or the Exchange Act, refers to controls and procedures that are designed to ensure that information required to be disclosed by a company in the reports that it files or submits under the Exchange Act is recorded, processed, summarized and reported, within the time periods specified in the Securities and Exchange Commission's rules and forms.

Disclosure controls and procedures include, without limitation, controls and procedures designed to ensure that information required to be disclosed by a company in the reports that it files or submits under the Exchange Act is accumulated and communicated to the company's management, including its principal executive and principal financial officers, or persons performing similar functions, as appropriate to allow timely decisions regarding required disclosure. Our management recognizes that any controls and procedures, no matter how well designed and operated, can provide only reasonable assurance of achieving their objectives and our management necessarily applies its judgment in evaluating the cost-benefit relationship of possible controls and procedures. Our disclosure controls and procedures are designed to provide reasonable assurance of achieving their control objectives.

Our management, with the participation of our Chief Executive Officer and Chief Financial Officer, has evaluated the effectiveness of our disclosure controls and procedures as of December 31, 2017, the end of the period covered by this Annual Report on Form 10-K. Based upon such evaluation, our Chief Executive Officer and Chief Financial Officer have concluded that our disclosure controls and procedures were effective at the reasonable assurance level as of such date.

Management's Report on Internal Control Over Financial Reporting

Our management is responsible for establishing and maintaining adequate internal control over financial reporting. Internal control over financial reporting is defined in Rules 13a-15(f) and 15d-15(f) under the Exchange Act as a process designed by, or under the supervision of, a company's principal executive officer and principal financial officer, or persons performing similar functions, and effected by a company's board of directors, management, and other personnel, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles and includes those policies and procedures that:

- pertain to the maintenance of records that in reasonable detail accurately and fairly reflect the transactions and dispositions of a company's assets;
- provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that a company's receipts and expenditures are being made only in accordance with authorizations of the company's management and directors; and
- provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use or disposition of our assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

Under the supervision of and with the participation of our principal executive officer and principal financial officer, our management assessed the effectiveness of our internal control over financial reporting as of December 31, 2017 based on the criteria set forth by the Committee of Sponsoring Organizations of the Treadway Commission (COSO) in *Internal Control—Integrated Framework* (2013 framework). Based on this assessment, management concluded that our internal control over financial reporting was effective as of December 31, 2017.

Changes in Internal Control over Financial Reporting

There was no change in our internal control over financial reporting that occurred during the three months ended December 31, 2017 that has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

ITEM 9B. Other Information

None.

Part III

Item 10. Directors, Executive Officers and Corporate Governance

EXECUTIVE OFFICERS AND DIRECTORS

The following table sets forth the name, age and positions of each of our executive officers and directors as of February 26, 2018.

Name	Age	Position(s)
Executive Officers		
Roger D. Tung, Ph. D.	58	President and Chief Executive Officer, Director
James V. Cassella, Ph.D.	63	Chief Development Officer
Nancy Stuart	59	Chief Operating Officer
Marc Becker	46	Chief Financial Officer
Lynette Herscha, J.D.	46	General Counsel
Non-Employee Directors		
Richard H. Aldrich	63	Director, Chairman of the Board of Directors
Thomas G. Auchincloss, Jr.	56	Director
Ronald W. Barrett, Ph.D.	62	Director
Meghan FitzGerald, Ph.D.	47	Director
Christine van Heek	61	Director
Peter Barton Hutt, LL.M	83	Director
Wilfred E. Jaeger, M.D.	62	Director
Wendell Wierenga, Ph.D.	70	Director

Executive Officers

Roger D. Tung, Ph.D. is our co-founder and has served as our President and Chief Executive Officer and as a member of our Board of Directors since April 2006. Before Concert, Dr. Tung was a founding scientist at Vertex Pharmaceuticals Incorporated, a pharmaceutical company, where he was employed from 1989 to 2005, most recently as its Vice President of Drug Discovery. Prior to Vertex, he held various positions at Merck, Sharp & Dohme Research Laboratories, a global healthcare provider, and The Squibb Institute for Medicinal Chemistry. Dr. Tung received a B.A. in Chemistry from Reed College and a Ph.D. in Medicinal Chemistry at the University of Wisconsin-Madison. We believe that Dr. Tung's detailed knowledge of our Company and his 33 year career in the global pharmaceutical and biotechnology industries, including his roles at Vertex, provide a critical contribution to our Board of Directors.

James V. Cassella has served as our Chief Development Officer since February 2015. Prior to joining Concert, Dr. Cassella served as Executive Vice President, Research and Development and Chief Scientific Officer of Alexza Pharmaceuticals, Inc. from July 2012 to January 2015 and served as its Senior Vice President, Research and Development from June 2004 to July 2012. From April 1989 to April 2004, Dr. Cassella held various management positions at Neurogen Corporation, a publicly traded biotechnology company. Prior to Neurogen, Dr. Cassella was Assistant Professor of Neuroscience at Oberlin College. Dr. Cassella received a Ph.D. in physiological psychology from Dartmouth College, completed a postdoctoral fellowship in the Department of Psychiatry at the Yale University School of Medicine and received a B.A. in psychology from the University of New Haven.

Nancy Stuart has served as our Chief Operating Officer since October 2007 and was our Senior Vice President, Corporate Strategy and Operations from July 2006 to October 2007. Prior to joining Concert, Ms. Stuart held various business operations and business development positions at Amgen Inc., a biopharmaceutical company, Kinetix Pharmaceuticals, Inc., a pharmaceutical company subsequently acquired by Amgen, Scion Pharmaceuticals, Inc., a pharmaceutical company, Vertex and Genzyme Corporation, a biotechnology company subsequently acquired by Sanofi S.A. Ms. Stuart holds a B.S. from the University of Michigan, and an M.B.A. from the Simmons College Graduate School of Management.

Marc Becker has served as our Chief Financial Officer and principal financial officer since January 2018. Prior to joining Concert, Mr. Becker served as the Chief Financial Officer of CRISPR Therapeutics, a publicly traded biotechnology company, from February 2016 to September 2017. From January 2012 to February 2016, Mr. Becker was the Chief Financial Officer of rEVO Biologics, a biotechnology company. Prior to rEVO Biologics, Mr. Becker held increasing roles of responsibility at Genzyme from August 2001 to October 2011, culminating in Vice President, Finance. Mr. Becker received an M.B.A. from Babson College and a B.S. in Business Administration from the University of Massachusetts and was licensed as a certified public accountant.

Lynette Herscha has served as our General Counsel and Corporate Secretary since June 1, 2017. Previously, Ms. Herscha served as our Vice President and Associate General Counsel and Assistant Secretary since July 2014. Prior to joining Concert, Ms. Herscha held senior legal positions at Momenta Pharmaceuticals, Inc., a biotechnology company and Phase Forward Incorporated, a technology company. Prior to that, Ms. Herscha worked in the law offices of Fulbright & Jaworksi. Ms. Herscha earned her Juris Doctor and B.A. in English from Boston University.

Non-Employee Directors

Richard H. Aldrich is our co-founder and has served as a member of our Board of Directors and as Chairman of our Board of Directors since May 2006. Mr. Aldrich is a co-founder and has been a Partner of Longwood Fund, a venture capital firm, since December 2010. Mr. Aldrich has been an employee of Longwood Management LLC since August 2015. Mr. Aldrich founded RA Capital Management LLC, a hedge fund, in 2001 and served as a Managing Member from 2001 to 2008 and as a Co-Founding Member from 2008 until 2011. Mr. Aldrich has co-founded and helped to build several biotechnology companies including Sirtris Pharmaceuticals, Inc., (acquired by GlaxoSmithKline in 2008), Alnara Pharmaceuticals, Inc. (acquired by Eli Lilly in 2010), Verastem, Inc., OvaScience, Inc. and FlexPharma. Mr. Aldrich was also a founding employee of Vertex Pharmaceuticals Incorporated, where he held the position of Senior Vice President and Chief Business Officer and managed all commercial and operating functions from 1989 to 2001. Prior to joining Vertex, Mr. Aldrich held several management positions at Biogen Inc. Mr. Aldrich serves on the board of directors of OvaScience, Inc., a public life sciences company where he serves as the Lead Director. Mr. Aldrich also serves on the board of a number of private biotechnology companies. During the last five years, Mr. Aldrich also served as a member of the board of directors of PTC Therapeutics, Inc., a public biopharmaceutical company and Verastem, Inc., a public biopharmaceutical company. Mr. Aldrich received his B.S. in Management from Boston College, and an M.B.A. from the Amos Tuck School at Dartmouth College. We believe Mr. Aldrich's broad-based experience in business, including his leadership and board experience at life science companies, and his familiarity with our business as a co-founder of our company allow him to be a key contributor to our Board of Directors.

Thomas G. Auchincloss, Jr. has served as a member of our Board of Directors since December 2014. Since October 2013, Mr. Auchincloss has served as Managing Partner at Counterpoint Trading Company, LLC, a private investment firm. From August 2007 through September 2013, Mr. Auchincloss was self-employed in private investing. From May 2005 to August 2007, Mr. Auchincloss worked as Chief Financial Officer of Metabolix, Inc., a public biomaterials company. Prior to joining Metabolix, Mr. Auchincloss served as a consultant with Metabolix, from April 2002 to May 2005, providing business development, financial and strategic consulting services. From 1994 to 2001, Mr. Auchincloss served in a variety of positions at Vertex Pharmaceuticals Incorporated, most recently as Vice President, Finance and Treasurer. Mr. Auchincloss received a B.S. in Business Administration from Babson College and an M.B.A. in Finance from the Wharton School. We believe that Mr. Auchincloss' financial and industry experience, including his experience as the chief financial officer of a publicly traded biomaterials company, make him a key contributor to our Board of Directors.

Ronald W. Barrett, Ph.D. has served as a member of our Board of Directors since December 2007. Dr. Barrett was a founder of XenoPort, Inc., a public biopharmaceutical company, and served as its Chief Executive Officer from 2001 to 2015, its Chief Scientific Officer from 1999 to 2001 and as a member of its board of directors from 1999 to 2015. Prior to XenoPort, Dr. Barrett held various positions at Affymax Research Institute, a drug discovery company now owned by GlaxoSmithKline plc, and Abbott Laboratories, a healthcare company. During the last five years, Dr. Barrett also served as a member of the board of directors of XenoPort. Dr. Barrett received a B.S. from Bucknell University and a Ph.D. in pharmacology from Rutgers

University. We believe that Dr. Barrett's industry and board experience, including his experience as the chief executive officer of a publicly traded biopharmaceutical company, makes him a key contributor to our Board of Directors.

Meghan FitzGerald, DrPH. has served as a member of our Board of Directors since March 2016. Since December 2016, Ms. FitzGerald has served as a Managing Partner at L1 Health LLC. From May 2015 to October 2016, Ms. FitzGerald served as Executive Vice President of Strategy and Policy at Cardinal Health. From October 2010 until May 2015, she served as President, Cardinal Health Specialty Solutions. Since July 2017, Ms. FitzGerald has served on the board of directors of Arix Bioscience plc, a publicly traded biotechnology company. Ms. FitzGerald also serves on the board of a number of private biotechnology companies. Ms. FitzGerald obtained a Doctor of Public Health degree at New York Medical College, focusing on health policy. She also earned a master's degree in public health from Columbia University and a B.S. in nursing from Fairfield University. Ms. FitzGerald's broad-based experience in business, including her leadership and board experience in the healthcare industry, allow her to be a key contributor to our Board of Directors.

Christine van Heek has served as a member of our Board of Directors since April 2016. Ms. van Heek has served as an adviser and consultant to several companies in the bio-pharmaceutical industry. From 1991 to 2003, Ms. van Heek served in various roles at Genzyme, Inc., a biotechnology company, including positions as Corporate Officer and President, Therapeutics Division; General Manager, Renal Division; and Vice President, Global Marketing. In addition, she has held various sales and marketing positions at Genentech, Inc. and Caremark/HHCA. During the last five years, Ms. van Heek also served as a member of the board of directors of Affymax, Inc., a biopharmaceutical company. Ms. van Heek holds an M.B.A. from Lindenwood University in St. Louis and a B.S.N. from the University of Iowa. We believe that Ms. van Heek's industry experience, including her extensive experience in strategic roles of a publicly traded biomaterials company, make her a key contributor to our Board of Directors.

Peter Barton Hutt has served as a member of our Board of Directors since December 2006. Mr. Hutt has practiced law at Covington & Burling LLP, specializing in food and drug law, since 1960 (except for the period from 1971 to 1975) and currently serves as senior counsel. From 1971 to 1975, he was Chief Counsel for the Food and Drug Administration. Mr. Hutt is a member of the board of directors of Flex Pharma, Inc., and Q Therapeutics, Inc., each of which is a public biotechnology company, as well as numerous private companies. During the last five years, Mr. Hutt also served as a member of the board of directors of BIND Therapeutics, Inc., Seres Health, Inc., Xoma Ltd., Celera Corporation, a public biotechnology company that was acquired by Quest Diagnostics, Inc. in 2011, DBV Technologies SA, a public biotechnology company, and Momenta Pharmaceuticals, Inc., a public biotechnology company. Mr. Hutt received a B.A. from Yale University, an LL.B. from Harvard Law School and an LL.M. from New York University School of Law. We believe Mr. Hutt's extensive knowledge of regulatory and legal issues related to drug development and his service on numerous boards of directors allow him to be a key contributor to our Board of Directors.

Wilfred E. Jaeger, M.D. has served as a member of our Board of Directors since May 2006. Dr. Jaeger co-founded Three Arch Partners, a venture capital firm, in 1993 and has served as a Partner since that time. Prior to co-founding Three Arch Partners, Dr. Jaeger was a general partner at Schroder Ventures. He is also a member of the board of directors of Threshold Pharmaceuticals, Inc., a public pharmaceutical company, and Nevro Corporation, a public medical device company, as well as numerous private companies. Dr. Jaeger received a B.S. in Biology from the University of British Columbia, his M.D. from the University of British Columbia School of Medicine and an M.B.A. from Stanford University. We believe that Dr. Jaeger's financial and medical knowledge and experience allow him to be a key contributor to our Board of Directors.

Wendell Wierenga, Ph.D. has served as a member of our Board of Directors since March 2014. From June 2011 to February 2014, Dr. Wierenga served as Executive Vice President, Research and Development of Santarus, Inc., a public biopharmaceutical company that was acquired by Salix Pharmaceuticals, Ltd. in January 2014. From 2007 to May 2011, Dr. Wierenga served as Executive Vice President, Research and Development of Ambit Biosciences Corporation, a biopharmaceutical company engaged in the discovery and development of small-molecule kinase inhibitors. Dr. Wierenga received a B.S. from Hope College and a Ph.D. in chemistry from Stanford University. Dr. Wierenga is a member of the boards of directors of Apricus Biosciences, Inc., and Cytokinetics, Incorporated, which are publicly traded biopharmaceutical companies. During the last five years, Dr. Wierenga also served as a member of the boards of directors of Anacor Pharmaceuticals, Inc., acquired by Pfizer in 2016, Xenoport, Inc., acquired by Arbor Pharmaceuticals in 2016, Ocera Therapeutics, Inc., acquired by Mallinckrodt in 2017, and Onyx Pharmaceuticals, Inc., a public biopharmaceutical company that was acquired by Amgen in 2013. We believe that Dr. Wierenga's extensive experience in biopharmaceutical research and development and his service on the boards of directors of several public biopharmaceutical companies allow him to be a key contributor to our Board of Directors.

Audit Committee

The members of our audit committee are Mr. Auchincloss, Dr. Jaeger and Ms. van Heek. Mr. Auchincloss is the chair of the audit committee. Our Board of Directors has determined that each of Mr. Auchincloss and Dr. Jaeger qualifies as an audit committee financial expert within the meaning of SEC regulations and the NASDAQ Listing Rules. In making this determination, our board has considered the formal education and nature and scope of each such director's previous experience, coupled with past and present service on various audit committees. Our audit committee assists our Board of Directors in its oversight of our accounting and financial reporting process and the audits of our financial statements. The audit committee met nine times during fiscal year 2017, including telephonic meetings. The audit committee's responsibilities include:

- appointing, approving the compensation of, and assessing the independence of our independent registered public accounting firm;
- overseeing the work of our independent registered public accounting firm, including through the receipt and consideration of reports from such firm;
- reviewing and discussing with management and the independent registered public accounting firm our annual and quarterly financial statements and related disclosures;
- monitoring our internal control over financial reporting, disclosure controls and procedures and code of business conduct and ethics;
- overseeing our internal audit function, if any;
- discussing our risk management policies;
- establishing policies regarding hiring employees from the independent registered public accounting firm and procedures for the receipt, retention and treatment of accounting related complaints and concerns;
- meeting independently with our internal auditing staff, independent registered public accounting firm and management;
- reviewing and approving or ratifying any related person transactions; and
- preparing the audit committee report required by SEC rules.

We believe that the composition of our audit committee meets the requirements for independence under current NASDAQ listing standards and SEC rules and regulations. Our Board of Directors has determined that Mr. Auchincloss, Dr. Jaeger and Ms. van Heek are independent as independence is currently defined in applicable NASDAQ listing standards.

Code of Business Conduct and Ethics

We have adopted a written code of business conduct and ethics that applies to our directors, officers and employees, including our principal executive officer, principal financial officer, principal accounting officer or controller, or persons performing similar functions. We have posted in the "Corporate Governance" page of the "Investors" section on our website, www.concertpharma.com, a current copy of the code and all disclosures that are required by law or NASDAQ stock market listing standards concerning any amendments to, or waivers from, any provision of the code. Information contained on the website is not incorporated by reference in, or considered part of, this Annual Report on Form 10-K.

Section 16(A) Beneficial Ownership Reporting Compliance

Section 16(a) of the Exchange Act requires our directors, executive officers, and persons holding more than 10% of Concert common stock to report their initial ownership of the common stock and other equity securities and any changes in that ownership in reports that must be filed with the SEC. The SEC has designated specific deadlines for these reports, and we must identify in this proxy statement those persons who did not file these reports when due. Based solely on a review of reports furnished to us, or written representations from reporting persons, we believe all directors, executive officers, and 10% owners timely filed all reports regarding transactions in Concert's securities required to be filed for 2017 by Section 16(a) under the Exchange Act.

Item 11. Executive Compensation

2017 Summary Compensation Table

The following table sets forth information regarding total compensation awarded to, earned by and paid to each individual who served as our chief executive officer during the year ended December 31, 2017 and our two most highly-compensated executive officers (other than our chief executive officer) who were serving as executive officers as of December 31, 2017 for services rendered in all capacities to the Company for the years indicated below. We refer to these individuals as our "named executive officers".

Name	Year	Salary ($)	Bonus ($)	Option awards ($) [1]	Stock awards ($)	Non-equity incentive plan compensation ($) [4]	All other compensation ($) [5]	Total ($)
Roger D. Tung, Ph.D.	2017	517,402	—	1,496,440	1,109,600 [2]	297,506	9,906	3,430,854
President and Chief Executive Officer	2016	499,905	—	1,937,609	—	199,962	9,756	2,647,232
James V. Cassella, Ph.D.	2017	406,445	—	523,754	832,200 [3]	186,965	10,872	1,960,236
Senior Vice President and Chief Development Officer	2016	392,700	—	569,885	—	125,664	10,722	1,098,971
Nancy Stuart	2017	398,247	—	523,754	832,200 [3]	183,194	9,906	1,947,301
Chief Operating Officer	2016	384,780	—	911,816	—	123,130	9,756	1,429,482

(1) The amounts included in the "Option awards" column reflect the aggregate grant date fair value of option awards granted in the years indicated, calculated in accordance with FASB ASC Topic 718. Such aggregate grant date fair values do not take into account any estimated forfeitures related to service-vesting conditions. The amounts reported in this column reflect the accounting cost for these stock options, and do not correspond to the actual economic value that may be received by the named executive officer upon exercise of the options. Assumptions used in the calculation of these amounts are included in Note 8 to the consolidated financial statements included elsewhere in this Annual Report on Form 10-K.

(2) The amount reported reflects the aggregate grant date fair value of performance stock units issued to Dr. Tung during fiscal year 2017, calculated in accordance with FASB ASC Topic 718. Assumptions used in the calculation of this amount are included in Note 8 to the consolidated financial statements included elsewhere in this Annual Report on Form 10-K.

(3) The amounts reported reflect the aggregate grant date fair value of restricted stock units and performance stock units issued to Dr. Cassella and Ms. Stuart during fiscal year 2017, calculated in accordance with FASB ASC Topic 718. Assumptions used in the calculation of these amounts are included in Note 8 to the consolidated financial statements included elsewhere in this Annual Report on Form 10-K.

(4) Consists of cash bonuses earned under our 2017 and 2016 executive bonus programs with respect to the years indicated. See the "Narrative to Summary Compensation Table" below for a description of the 2017 executive bonus program.

(5) Amounts disclosed under the column "All Other Compensation" for 2017 represent Company matching contributions to 401(k) accounts and life insurance premiums.

Narrative to Summary Compensation Table

We review compensation annually for all employees, including our executives. In setting executive base salaries and target incentive bonus levels, determining actual incentive bonus amounts and granting equity incentive awards, we consider compensation for comparable positions in the market, the historical compensation levels of our executives, individual performance as compared to our expectations and objectives, our desire to motivate our employees to achieve short- and long-

term results that are in the best interests of our stockholders, and a long-term commitment to our Company. We do not target a specific competitive position or a specific mix of compensation among base salary, bonus or long-term incentives.

Our compensation committee has primary responsibility for determining the compensation of our executive officers. Our compensation committee typically reviews and discusses proposed compensation with the chief executive officer for all executives other than for the chief executive officer. The compensation committee, without the applicable members of management present, discusses recommendations for management and ultimately approves the compensation of our executive officers. During 2017, our compensation committee engaged Radford, an AON Hewitt company, as its independent compensation consultant, to review our executive compensation peer group and program design and to assist with assessing our executives' compensation relative to those at comparable companies. Our compensation committee considered the relationship that Radford has with us, the members of our Board of Directors and our executive officers. Based on the committee's evaluation, the compensation committee has determined that Radford is independent and that their work has not raised any conflicts of interests.

Radford assisted the committee in conducting a competitive compensation assessment for our executive officers for the fiscal year ended December 31, 2017. In evaluating the total compensation of our executive officers, the compensation committee, with the assistance of Radford, reviewed compensation information from our peer group companies. Radford then supplemented the peer group proxy information with published survey data, which provided a broader market representation of companies and deeper position reporting.

Using information provided by Radford, the compensation committee establishes a peer group of publicly traded companies in the biopharmaceutical and biotechnology industries that is selected based on a balance of the following criteria:

- companies whose number of employees, stage of development and market capitalization are similar, though not necessarily identical, to ours;
- companies with similar executive positions to ours;
- companies against which we believe we compete for executive talent; and
- public companies based in the United States whose compensation and financial data are available in proxy statements or through widely available compensation surveys.

Based on these criteria, our peer group for 2017 was comprised of the following 21 publicly traded companies:

Achillion Pharmaceuticals, Inc.	Genocea Biosciences, Inc.	Paratek Pharmaceuticals, Inc.
Agenus, Inc.	Geron Corporation	Sangamo Biosciences, Inc.
Akebia Therapeutics, Inc.	GlycoMimetics, Inc.	Selecta Biosciences, Inc.
Ardelyx, Inc.	Ignyta, Inc.	Trevena, Inc.
Cytokinetics, Inc.	Inovio Pharmaceuticals, Inc.	Xencor, Inc.
Edge Therapeutics, Inc.	Karyopharm Therapeutics, Inc.	Ziopharm Oncology, Inc.
Epyzime, Inc.	Mirati Therapeutics, Inc.	Zogenix, Inc.

Base salary. In 2017, the base salaries for Dr. Tung, Dr. Cassella, and Ms. Stuart were $517,402, $406,445 and $398,247, respectively. We use base salaries to recognize the experience, skills, knowledge and responsibilities required of all our employees, including our named executive officers. None of our named executive officers is currently party to an employment agreement or other agreement or arrangement that provides for automatic or scheduled increases in base salary.

Annual bonus. Pursuant to our executive bonus program for 2017, our Board of Directors established and approved annual bonus targets based on achievement of specified corporate goals. The target bonus amounts for the named executive officers were 50% of base salary for Dr. Tung and 40% of base salary for each of Dr. Cassella and Ms. Stuart. Our corporate goals are typically focused on the achievement of specific research, clinical, regulatory, financial and strategic goals. We consider these to be difficult to attain, conducive to the creation of stockholder value and designed to contribute to our current and future

financial success. The corporate goals for 2017 were to identify new candidate compounds, partner our CTP-656 program, advance our CTP-543 program, and raise capital.

In January 2018, the compensation committee conducted a review to determine and approve the attainment of such goals and to assess the individual performance of each of our named executive officers. Based upon such review and assessment, the compensation committee approved cash incentive bonuses of $297,506 to Dr. Tung, $186,965 to Dr. Cassella and $183,194 to Ms. Stuart for 2017.

Equity incentives. Although we do not have a formal policy with respect to the grant of equity incentive awards to our executive officers, or any formal equity ownership guidelines applicable to them, we believe that equity grants provide our executives with a strong link to our long-term performance, create an ownership culture and help to align the interests of our executives and our stockholders. In addition, we believe that equity grants with a time-based vesting feature promote executive retention because this feature incentivizes our executive officers to remain in our employment during the vesting period. Accordingly, we typically grant stock option awards at the start of employment to each executive officer and our other employees and our compensation committee and Board of Directors periodically review the equity incentive compensation of our named executive officers and other employees, and from time to time, may grant equity incentive awards to them in the form of stock options.

For stock options, the option exercise price is equal to the fair market value of our common stock on the date of grant. Time vested stock option grants made in connection with commencement of employment with us typically vest 25% on the first anniversary of the date of grant or, if earlier, the initial employment date (the "vesting commencement date"), and 6.25% vest per quarter thereafter, through the fourth anniversary of the vesting commencement date. Other stock option grants generally vest 6.25% per quarter through the fourth anniversary of the vesting commencement date.

In January 2017, we granted each of Dr. Tung, Dr. Cassella, and Ms. Stuart an option to purchase 200,000, 70,000 and 70,000 shares of our common stock, respectively. In July 2017, we awarded each of Dr. Tung, Dr. Cassella, and Ms. Stuart restricted stock units that vest subject to the achievement of certain performance conditions in the amount of 80,000, 30,000, and 30,000 stock units, respectively. In addition, Dr. Cassella and Ms. Stuart were each granted 30,000 restricted stock units that are subject to time-based vesting. The vesting conditions applicable to such restricted stock units are described in the footnotes to the "Outstanding Equity Awards at 2017 Fiscal Year End Table" below.

Outstanding Equity Awards at 2017 Fiscal Year End Table

The following table sets forth information regarding outstanding stock options held by our named executive officers as of December 31, 2017.

	Options Awards				Stock Awards			
Name	**Number of securities underlying unexercised options (#) exercisable**	**Number of securities underlying unexercised options (#) unexercisable**	**Option exercise price ($)**	**Option expiration date**	**Number of units of stock that have not vested (#)**	**Market value of units of stock that have not vested ($) [9]**	**Equity incentive plan awards: Number of unearned units that have not vested (#)**	**Equity incentive plan awards: Market or payout value of unearned shares, units or other rights that have not vested ($)**
Roger D. Tung, Ph.D.	27,757	— [1]	4.58	12/19/2018				
	38,052	— [2]	4.41	12/10/2019				
	29,202	— [3]	3.79	12/14/2020				
	39,822	— [4]	3.50	12/15/2021				
	177,888	25,412 [5]	8.40	6/10/2024				
	74,375	95,625 [6]	16.85	1/7/2026				
	37,500	162,500 [7]	10.97	1/4/2027				
					40,000 [10]	1,034,800	40,000 [11]	1,034,800
James V. Cassella, Ph.D.	96,250	43,750 [8]	14.46	3/5/2025				
	21,875	28,125 [6]	16.85	1/7/2026				
	13,125	56,875 [7]	10.97	1/4/2027				
					45,000 [12]	1,164,150	15,000 [13]	388,050
Nancy Stuart	48,882	— [1]	4.58	12/19/2018				
	34,512	— [2]	4.41	12/10/2019				
	21,238	— [3]	3.79	12/14/2020				
	22,122	— [4]	3.50	12/15/2021				
	87,500	12,500 [5]	8.40	06/10/2024				
	35,000	45,000 [6]	16.85	01/07/2026				
	13,125	56,875 [7]	10.97	01/04/2027				
					45,000 [12]	1,164,150	15,000 [13]	388,050

(1) This stock option was granted under our 2006 Stock Option and Grant Plan and was subject to vesting in equal quarterly installments over four years from the vesting start date and fully vested in accordance with its terms on December 19, 2012.

(2) This stock option was granted under our 2006 Stock Option and Grant Plan and was subject to vesting in equal quarterly installments over four years from the vesting start date and fully vested in accordance with its terms on December 10, 2013.

(3) This stock option was granted under our 2006 Stock Option and Grant Plan and was subject to vesting in equal quarterly installments over four years from the vesting start date and fully vested in accordance with its terms on December 14, 2014.

(4) This stock option was granted under our 2006 Stock Option and Grant Plan and was subject to vesting in equal quarterly installments over four years from the vesting start date and fully vested in accordance with its terms on December 15, 2015.

(5) This option was granted under our 2014 Stock Incentive Plan and vested as to 25% of the shares underlying such option on June 10, 2015 and vests as to an additional 6.25% of the shares at the end of each successive quarter thereafter, through and including June 10, 2018.

(6) This option was granted under our 2014 Stock Incentive Plan and vests as to 6.25% of the shares underlying such option at the end of each quarter, through and including January 7, 2020.

(7) This option was granted under our 2014 Stock Incentive Plan and vests as to 6.25% of the shares underlying such option at the end of each quarter, through and including January 4, 2021.

(8) This option was granted under our 2014 Stock Incentive Plan and vested as to 25% of the shares underlying such option on March 5, 2016 and vests as to an additional 6.25% of the shares at the end of each successive quarter thereafter, through and including March 5, 2019.

(9) Based on the closing price of $25.87, which was the closing market price on NASDAQ of our common stock on December 29, 2017, the last trading day of 2017.

(10) These performance stock units were granted on July 6, 2017, with 50% of the award vesting on March 31, 2018 and the remaining 50% eligible to vest on March 31, 2019, subject to the achievement of the closing of the Asset Purchase Agreement with Vertex Pharmaceuticals prior to March 31, 2018 (considered achieved and further discussed in detail at Note 14 of the consolidated financial statements elsewhere in this Annual Report on Form 10-K), provided that Dr. Tung remains employed by the Company through the applicable vesting date.

(11) These performance stock units were granted on July 6, 2017, with 50% of the award eligible to vest on March 31, 2018 and the remaining 50% eligible to vest on March 31, 2019, in each case subject to the institution by the Patent Trial and Appeal Board of a Post Grant Review petition filed by the Company against Incyte Corporation prior to March 31, 2018, provided that Dr. Tung remains employed by the Company through the applicable vesting date.

(12) Consists of restricted stock units granted on July 6, 2017, which vest in full on March 31, 2019 assuming the executive officer remains employed with the Company through such date, and performance stock units granted on July 6, 2017, which vest in full on March 31, 2018, subject to the achievement of the closing of the Asset Purchase Agreement with Vertex Pharmaceuticals prior to March 31, 2018 (considered achieved and further discussed in detail at Note 14 of the consolidated financial statements elsewhere in this Annual Report on Form 10-K), provided that the executive officer remains employed by the Company through the vesting date.

(13) Consists of performance stock units granted on July 6, 2017, which vest in full on March 31, 2018 subject to the achievement of the institution by the Patent Trial and Appeal Board of a Post Grant Review petition filed by the Company against Incyte Corporation prior to March 31, 2018, provided that the executive officer remains employed by the Company through the vesting date.

Employment Agreements, Severance and Change in Control Arrangements

Employment agreements

We have entered into employment agreements with each of our named executive officers. The employment agreements confirm the executive officers' titles, compensation arrangements, eligibility for benefits made available to employees generally and also provide for certain benefits upon a termination of employment under specified conditions. Each named executive officer's employment is at will.

Payments and benefits provided upon a qualifying termination not in connection with a change of control

Under the terms of the employment agreements we have entered into with each of the named executive officers, if an executive's employment is terminated by us other than for "cause" and other than as a result of death or disability or by such executive officer for "good reason", each as defined in such employment agreement, in each case not within the "change of control period", as defined below, and subject to the executive's execution of an effective general release of potential claims against us, each named executive officer will be entitled to (1) an amount equal to his or her then-current monthly base salary

for a period of 12 months, or 15 months in the case of Dr. Tung, and (2) continued Company paid medical and dental benefits to the extent that the named executive officer was receiving them at the time of termination until the earlier of 12 months following termination, or 15 months following termination in the case of Dr. Tung, and the date the named executive officer's COBRA continuation coverage expires, subject to certain legal restrictions.

Payments and benefits provided upon a qualifying termination in connection with a change of control

Under the terms of the employment agreements we have entered into with each of the named executive officers, if the executive's employment is terminated by us or our successor other than for cause or by such executive officer for good reason, in each case, within one year following a "change of control", as defined in such employment agreement (the "change of control period"), and subject to the executive's execution of an effective general release of potential claims against us, in lieu of the severance benefits described above, each named executive officer will be entitled to:

- An amount equal to 12 months (or 18 months in the case of Dr. Tung) of the named executive officer's base salary, which will be paid as a lump sum if the change of control constitutes a change in control under Section 409A of the Internal Revenue Code.
- An amount equal his or her current target bonus (or 1.5 times his target bonus in the case of Dr. Tung).
- Continued Company paid medical and dental benefits to the executive to the extent that he or she was receiving them at the time of termination until the earlier of 12 months (or 18 months in the case of Dr. Tung) following termination and the date the named executive officer's COBRA continuation coverage expires, subject to certain legal restrictions.

In addition, if a change of control occurs and within one year following such change of control we or our successor terminate the executive's employment other than for cause or the executive's employment ends due to the executive's death or disability, or the executive terminates his or her employment for good reason then all stock options held by the executive will immediately vest in full.

If the payments or benefits payable to each named executive officer in connection with a change of control would be subject to the excise tax imposed under Section 4999 of the Internal Revenue Code, then those payments or benefits will be reduced to the extent necessary to avoid the imposition of such excise tax but only if such reduction would result in a higher net after-tax benefit to the named executive officer.

The following table summarizes the severance payments and benefits our named executive officers would be entitled to receive, assuming a qualifying termination occurred on December 31, 2017.

Name	Cash Severance ($) [1]	Bonus ($) [2]	COBRA Continuation ($) [3]	Value of Accelerated Vesting of Stock Options ($) [4]	Total ($)
Roger D. Tung, Ph.D.					
Qualifying termination not in connection with a change of control	646,753	—	36,223	—	682,976
Qualifying termination in connection with a change of control	776,103	388,052	43,468	3,727,735	4,935,358
James V. Cassella, Ph.D.					
Qualifying termination not in connection with a change of control	406,445	—	29,202	—	435,647
Qualifying termination in connection with a change of control	406,445	162,578	29,202	1,600,313	2,198,538
Nancy Stuart					
Qualifying termination not in connection with a change of control	398,247	—	27,163	—	425,410
Qualifying termination in connection with a change of control	398,247	159,299	27,163	1,471,713	2,056,422

(1) For a termination by us other than for cause or due to death or disability or by the executive for good reason, in each case not during the change of control period, this amount represents, in the case of Dr. Tung, 15 months of base salary, and in the case of Ms. Stuart and Dr. Cassella, 12 months of base salary, each at the rate in effect on December 31, 2017.

In the event of a termination by us other than for cause or by the executive for good reason, in each case within 12 months of a change of control, this amount represents, in the case of Dr. Tung, 18 months base salary, and in the case of Ms. Stuart and Dr. Cassella, 12 months of base salary, each at the rate in effect on December 31, 2017.

(2) In the event of a termination by us other than for cause or by the executive for good reason, in each case within 12 months of a change of control, amounts represent in the case of Dr. Tung, 150% of his target bonus for 2017, and in the case of Ms. Stuart and Dr. Cassella, 100% of the applicable executive's target bonus for 2017.

(3) This amount represents the Company-paid health and dental coverage. In the case of Dr. Tung, the amounts represent 15 months payable following a termination by us other than for cause or due to death or disability or by him for good reason, in each case not during the change of control period, and represents 18 months payable following a termination by us other than for cause or by him for good reason, in each case within 12 months of a change of control. With respect to Ms. Stuart and Dr. Cassella, amounts represent 12 months of Company-paid health and dental coverage.

(4) In the event of a termination by us other than for cause, termination due to death or disability or a termination by the executive for good reason, in each case within 12 months of a change of control, all unvested stock options held by the executive at such time will immediately vest in full. The values for the accelerated vesting of stock options included in the table above are based on the intrinsic values of such unvested awards on December 31, 2017 (i.e., the difference between the closing price of the Company's common stock on the NASDAQ Global Market on that date and the applicable exercise price, multiplied by the number of shares for which vesting would have been accelerated).

Other agreements

We have also entered into employee confidentiality, non-competition and proprietary information agreements with each of our named executive officers. Under the employee confidentiality, non-competition and proprietary information agreements, each named executive officer has agreed (1) not to compete with us during his or her employment and for a period of one year after the termination of his or her employment, (2) not to solicit our employees during his or her employment and for a period of one year after the termination of his or her employment, (3) to protect our confidential and proprietary information and (4) to assign to us related intellectual property developed during the course of his or her employment.

401(k) retirement plan

We maintain a 401(k) retirement plan that is intended to be a tax-qualified defined contribution plan under Section 401(k) of the Internal Revenue Code. In general, all of our employees are eligible to participate, beginning on the first day of the month following commencement of their employment. The 401(k) plan includes a salary deferral arrangement pursuant to which participants may elect to reduce their current compensation by up to the statutorily prescribed limit, equal to $18,000 in 2017, and have the amount of the reduction contributed to the 401(k) plan. Participants over the age of 50 are entitled to an additional catch-up contribution up to the statutorily prescribed limit, equal to $6,000 in 2017. Currently, we match 50% of employee contributions up to 6% of the employee's salary, subject to the statutorily prescribed limit, equal to $8,100 in 2017. The match immediately vests in full.

Director Compensation

During 2017, we did not provide any compensation to Dr. Tung, our Chief Executive Officer, for his service as a member of our Board of Directors. Dr. Tung's compensation as an executive officer is set forth above under "Executive Compensation—2017 Summary Compensation Table."

Non-employee director compensation is set by our Board of Directors at the recommendation of our compensation committee. In April 2017, we retained Radford to assist in assessing our non-employee director compensation program and provide recommendations for changes to the program, if any. The 2017 peer group companies were used in the analysis, as well as other market data.

Under our director compensation program, we pay our non-employee directors a cash retainer for their service on the Board of Directors and for their service on each committee of which the director is a member. The Chairman of the Board of Directors and the chairs of each committee receive higher retainers for such service. These fees are payable in arrears in four equal quarterly installments on the last day of each quarter, provided that the amount of such payment is prorated for any portion of such quarter that the director is not serving on our Board of Directors. The fees paid to non-employee directors for their service on the Board of Directors and for their service on each committee of the Board of Directors of which the director is a member are as follows:

	Annual Member Fee ($)	Chairman Annual Fee ($)
Board of Directors	40,000	65,000
Audit Committee	7,500	15,000
Compensation Committee	5,000	10,000
Nominating and Corporate Governance Committee	3,000	7,000

We also reimburse our non-employee directors for reasonable travel and out-of-pocket expenses incurred in connection with attending our Board of Director and committee meetings.

In addition, under our director compensation program, each new non-employee director elected to our Board of Directors receives an option to purchase 25,000 shares of our common stock. Each of these options vest in equal quarterly installments over a three-year period measured from the date of grant, subject to the director's continued service as a director, and will become vested and exercisable in full upon a change in control of our Company. Further, on the date of the first board meeting held after each annual meeting of stockholders, each non-employee director that has served on our Board of Directors for at least six months will receive an option to purchase 10,000 shares of our common stock. Each of these options vest in equal quarterly installments over a one-year period measured from the date of grant, subject to the director's continued service as a director, and will become vested and exercisable in full upon a change in control of our Company. The exercise price of each option is equal to the fair market value of a share of our common stock on the date of grant.

This program is intended to provide a total compensation package that enables us to attract and retain qualified and experienced individuals to serve as our directors and to align our directors' interests with those of our stockholders.

In accordance with our director compensation program, in June 2017 we granted options to purchase 10,000 shares of our common stock to each non-employee serving on the Board of Directors.

The following table sets forth information regarding compensation earned by our non-employee directors during 2017.

Name	Fees earned or paid in cash ($)	Option awards ($) (1)	Total ($)
Richard H. Aldrich	77,000	90,720	167,720
Thomas G. Auchincloss, Jr.	52,720	90,720	143,440
Ronald W. Barrett, Ph.D.	47,720	90,720	138,440
Meghan FitzGerald, Ph.D.	42,720	90,720	133,440
Christine van Heek	45,220	90,720	135,940
Peter Barton Hutt	29,970	90,720	120,690
Wilfred E. Jaeger, M.D.	50,220	90,720	140,940
Wendell Wierenga, Ph.D.	40,720	90,720	131,440

(1) The amounts included in the "Option awards" column reflect the aggregate grant date fair value of options granted during 2017 calculated in accordance with FASB ASC Topic 718. Such aggregate grant date fair values do not take into account any estimated forfeitures related to service-vesting conditions. The amounts reported in this column reflect the accounting cost for these stock options, and do not correspond to the actual economic value that may be received by the director upon exercise of the options. Assumptions used in the calculation of these amounts are included in Note 8 to the consolidated financial statements appearing elsewhere in this Annual Report on Form 10-K. As of December 31, 2017. As of December 31, 2017, the non-employee members of our Board of Directors held the following outstanding equity awards:

- Mr. Aldrich held stock options to purchase 51,236 shares of common stock in the aggregate, of which 46,236 shares were vested, with the remaining shares scheduled to vest through and including June 15, 2018;
- Mr. Auchincloss held stock options to purchase 55,000 shares of common stock in the aggregate, of which 50,000 shares were vested, with the remaining shares scheduled to vest through and including June 15, 2018;
- Dr. Barrett held stock options to purchase 30,000 shares of common stock in the aggregate, of which 25,000 shares were vested, with the remaining shares scheduled to vest through and including June 15, 2018;
- Dr. FitzGerald held stock options to purchase 35,000 shares of common stock in the aggregate, of which 19,583 shares were vested, with the remaining shares scheduled to vest through and including March 22, 2019;
- Ms. van Heek held stock options to purchase 35,000 shares of common stock in the aggregate, of which 17,500 shares were vested, with the remaining shares scheduled to vest through and including June 9, 2019;
- Mr. Hutt held stock options to purchase 44,156 shares of common stock in the aggregate, of which 39,156 shares were vested, with the remaining shares scheduled to vest through and including June 15, 2018;
- Dr. Jaeger held a stock option to purchase 30,000 shares of common stock, of which 25,000 shares were vested, with the remaining shares scheduled to vest through and including June 15, 2018;
- Dr. Wierenga held a stock option to purchase 58,538 shares of common stock, of which 53,538 shares were vested, with the remaining shares scheduled to vest through and including June 15, 2018.

Compensation Committee Interlocks and Insider Participation

During 2017, the members of our compensation committee were Dr. Barrett, Mr. Aldrich and Dr. FitzGerald. None of our executive officers serves, or in the past has served, as a member of the board of directors or compensation committee, or other committee serving an equivalent function, of any entity that has one or more executive officers who serve as members of our board of directors or our compensation committee. None of the members of our compensation committee is an officer or employee of our company, nor have they ever been an officer or employee of our Company.

Compensation Committee Report

The information contained in this report shall not be deemed to be (1) "soliciting material," (2) "filed" with the SEC, (3) subject to Regulations 14A or 14C of the Exchange Act, or (4) subject to the liabilities of Section 18 of the Exchange Act. This report shall not be deemed incorporated by reference into any of our other filings under the Exchange Act or the Securities Act, except to the extent that we specifically incorporate it by reference into such filing.

The compensation committee reviewed and discussed the disclosure included in the Executive Compensation section of this Annual Report on Form 10-K with management. Based on the review and discussions, the compensation committee recommended to the Board of Directors that the disclosure included in the Executive Compensation section be included in this Annual Report on Form 10-K for the year ended December 31, 2017, for filing with the SEC.

The Compensation Committee members

Ronald W. Barrett, Ph.D. (Chair)
Richard H. Aldrich
Meghan FitzGerald, Ph.D.

Item 12. Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters

The following table sets forth information, to the extent known by us or ascertainable from public filings, with respect to the beneficial ownership of our common stock as of January 31, 2018 by:

- each of our directors and our director nominees;
- each of our named executive officers;
- all of our directors, our director nominees and executive officers as a group; and
- each person, or group of affiliated persons, who is known by us to beneficially own more than 5% of our common stock.

Beneficial ownership is determined in accordance with the rules and regulations of the SEC. These rules generally attribute beneficial ownership of securities to persons who possess sole or shared voting power or investment power with respect to those securities and include shares of common stock issuable upon the exercise of stock options that are immediately exercisable or exercisable within 60 days after January 31, 2018. Except as otherwise indicated, all of the shares reflected in the table are shares of common stock and all persons listed below have sole voting and investment power with respect to the shares beneficially owned by them, subject to community property laws, where applicable. The information is not necessarily indicative of beneficial ownership for any other purpose.

The percentage ownership calculations for beneficial ownership are based on 23,226,702 shares of common stock outstanding as of January 31, 2018. Except as otherwise indicated in the table below, addresses of named beneficial owners are in care of Concert Pharmaceuticals, Inc., 99 Hayden Avenue, Suite 500, Lexington, Massachusetts 02421.

In computing the number of shares of common stock beneficially owned by a person and the percentage ownership of that person, we deemed outstanding shares of common stock subject to options held by that person that are currently exercisable or exercisable within 60 days after January 31, 2018. We did not deem these shares outstanding, however, for the purpose of computing the percentage ownership of any other person.

Name of beneficial owner	Number of shares beneficially owned	Percentage of shares beneficially owned
5% Stockholders		
Entities affiliated with BVF, Inc.(1)	1,969,789	8.5%
Entities affiliated with BlackRock Inc.(2)	1,786,223	7.7%
Ingalls & Snyder LLC (3)	1,332,662	5.7%
Entities affiliated with GlaxoSmithKline (4)	1,179,941	5.1%
Executive Officers and Directors		
Roger D. Tung, Ph.D.(5)	1,151,061	5.0%
James V. Cassella, Ph.D.(6)	147,500	*
Nancy Stuart (7)	309,916	1.3%
Richard H. Aldrich (8)	358,826	1.5%
Thomas G. Auchincloss (9)	54,500	*
Ronald W. Barrett, Ph.D.(10)	27,500	*
Meghan FitzGerald, Ph.D. (11)	24,167	*
Christine van Heek (12)	22,083	*
Peter Barton Hutt, LL.M (13)	46,080	*
Wilfred E. Jaeger, M.D.(14)	27,500	*
Wendell Wierenga, Ph.D.(15)	67,677	*
All current executive officers and directors as a group (13 persons) (16)	2,294,185	9.4%

* Represents beneficial ownership of less than 1% of our outstanding stock.

(1) Based on information set forth in a Form 4 filed with the Securities and Exchange Commission on December 21, 2017 by the following entities and individual. Consists of (i) 951,300 shares of common stock beneficially owned by Biotechnology Value Fund, L.P. ("BVF"), (ii) 632,642 shares of common stock beneficially owned by Biotechnology Value Fund II, L.P ("BVF2") and (iii) 122,496 shares of common stock beneficially owned by Biotechnology Value Trading Fund OS LP ("Trading Fund OS"). BVF Partners OS Ltd. ("Partners OS") as the general partner of Trading Fund OS may be deemed to beneficially own the 122,496 shares of Common Stock beneficially owned by Trading Fund OS. BVF Partners L.P. ("Partners"), as the general partner of BVF, BVF2, the investment manager of Trading Fund OS, and the sole member of Partners OS, may be deemed to beneficially own the 1,969,789 shares of Common Stock beneficially owned in the aggregate by BVF, BVF2, Trading Fund OS, and certain Partners management accounts (the "Partners Management Accounts"), including 263,351 shares of Common Stock held in the Partners Managed Accounts. BVF Inc., as the investment adviser and general partner of Partners, may be deemed to beneficially own the 1,706,438 shares of Common Stock beneficially owned by Partners. Mr. Lampert, as a director and officer of BVF Inc., may be deemed to beneficially own the 1,706,438 shares of Common Stock beneficially owned by BVF Inc. Partners OS disclaims beneficial ownership of the shares of Common Stock beneficially owned by Trading Fund OS. Each of Partners, BVF Inc. and Mr. Lampert disclaims beneficial ownership of the shares of Common Stock beneficially owned by BVF, BVF2, Trading Fund OS, and the Partners Management Accounts. The address for Trading Fund OS and Partners OS is PO Box 309 Ugland House, Grand Cayman, KY1-1104 Cayman Islands and the address for each of the other entities and for Mr. Lampert is 1 Sansome Street, 30th Floor, San Francisco, California 94104.

(2) Based on information set forth in a Schedule 13G filed with the Securities and Exchange Commission on February 1, 2018 by BlackRock, Inc. Consists of 1,786,223 shares of common stock beneficially owned by BlackRock, Inc. The address for BlackRock, Inc. is 55 East 52nd Street, New York, NY, 10055.

(3) Based on information set forth in a Schedule 13G filed with the Securities and Exchange Commission on February 9, 2018 by Ingalls & Snyder LLC. Consists of 1,322,662 shares of common stock beneficially owned by Ingalls & Snyder LLC. The address for Ingalls & Snyder LLC is 1325 Avenue of the Americas, New York, NY, 10019.

(4) Based on information set forth in a Schedule 13G filed with the Securities and Exchange Commission on February 13, 2018 by GlaxoSmithKline plc. Consists of 1,179,941 shares of common stock held by Glaxo Group Limited, a wholly owned subsidiary of GlaxoSmithKline plc. The address of these entities is 980 Great West Road, Brentford, Middlesex, United Kingdom TW8 9GS.

(5) In addition to shares of common stock held directly, includes 121,873 shares of common stock held by the Roger D. Tung 2011 GRAT, for which Dr. Tung is the sole trustee, 12,389 shares of common stock held by the RD Tung Irrevocable Trust, for which Dr. Tung's wife is a co-trustee, and 13,274 shares of common stock held by the Tung Family Investment Trust, for which Dr. Tung is a co-trustee. Includes 460,427 shares of common stock issuable upon the exercise of options exercisable within 60 days after January 31, 2018.

(6) Consists of 147,500 shares of common stock issuable upon exercise of options exercisable within 60 days after January 31, 2018.

(7) In addition to shares of common stock held directly, includes 229,122 shares of common stock issuable upon the exercise of options exercisable within 60 days after January 31, 2018.

(8) In addition to shares of common stock held directly, includes 44,351 shares of common stock held by the Little Eagles, LLC, of which the owners of Little Eagles, LLC are Richard H. Aldrich Irrevocable Trust of 2011 and trusts established for the benefit of the Mr. Aldrich's minor children. The trustees of Richard H. Aldrich Irrevocable Trust of 2011 are Mr. Aldrich's spouse, Nichole A. Aldrich, and Mr. Aldrich's brother, Caleb F. Aldrich. The beneficiaries of Richard H. Aldrich Irrevocable Trust of 2011 are Mr. Aldrich's minor children. Mr. Aldrich disclaims beneficial ownership of such shares except to the extent of any pecuniary interest therein. Includes 27,500 shares of common stock issuable upon the exercise of options exercisable within 60 days after January 31, 2018.

(9) In addition to shares of common stock held directly, includes 52,500 shares of common stock issuable upon the exercise of options exercisable within 60 days after January 31, 2018.

(10) Consists of 27,500 shares of common stock issuable upon the exercise of options exercisable within 60 days after January 31, 2018.

(11) Consists of 24,167 shares of common stock issuable upon the exercise of options exercisable within 60 days after January 31, 2018.

(12) Consists of 22,083 shares of common stock issuable upon the exercise of options exercisable within 60 days after January 31, 2018.

(13) In addition to shares held directly, includes 41,656 shares of common stock issuable upon the exercise of options exercisable within 60 days after January 31, 2018.

(14) Consists of 27,500 shares of common stock issuable upon the exercise of options exercisable within 60 days after January 31, 2018.

(15) In addition to shares held directly, includes 56,038 shares of common stock issuable upon the exercise of options exercisable within 60 days after January 31, 2018.

(16) Includes 1,173,368 shares of common stock issuable upon the exercise of options exercisable within 60 days after January 31, 2018.

Item 13. Certain Relationships and Related Transactions, and Director Independence

Policies and Procedures for Related Person Transactions

Our Board of Directors has adopted a written related person transaction policy to set forth policies and procedures for the review and approval or ratification of related person transactions. This policy covers any transaction, arrangement or relationship, or any series of similar transactions, arrangements or relationships, in which we were or are to be a participant, the amount involved exceeds $120,000, and a related person had or will have a direct or indirect material interest, including, without limitation, purchases of goods or services by or from the related person or entities in which the related person has a material interest, indebtedness, guarantees of indebtedness and employment by us of a related person.

Our related person transaction policy contains exceptions for any transaction or interest that is not considered a related person transaction under SEC rules as in effect from time to time. In addition, the policy provides that an interest arising solely from a related person's position as an executive officer of another entity that is a participant in a transaction with us will not be subject to the policy if each of the following conditions is met:

- the related person and all other related persons own in the aggregate less than a 10% equity interest in such entity;
- the related person and his or her immediate family members are not involved in the negotiation of the terms of the transaction with us and do not receive any special benefits as a result of the transaction; and
- the amount involved in the transaction equals less than the greater of $200,000 or 5% of the annual gross revenue of the company receiving payment under the transaction.

The policy provides that any related person transaction proposed to be entered into by us must be reported to our General Counsel and will be reviewed and approved by our audit committee in accordance with the terms of the policy, prior to effectiveness or consummation of the transaction whenever practicable. The policy provides that if our chief financial officer determines that advance approval of a related person transaction is not practicable under the circumstances, our audit committee will review and, in its discretion, may ratify the related person transaction at the next meeting of the audit committee. The policy also provides that alternatively, our chief financial officer may present a related person transaction arising in the time period between meetings of the audit committee to the chair of the audit committee, who will review and may approve the related person transaction, subject to ratification by the audit committee at the next meeting of the audit committee.

In addition, the policy provides that any related person transaction previously approved by the audit committee or otherwise already existing that is ongoing in nature will be reviewed by the audit committee annually to ensure that such related person transaction has been conducted in accordance with the previous approval granted by the audit committee, if any, and that all required disclosures regarding the related person transaction are made.

The policy provides that transactions involving compensation of executive officers will be reviewed and approved by our compensation committee in the manner to be specified in the charter of the compensation committee.

A related person transaction reviewed under this policy will be considered approved or ratified if it is authorized by the audit committee in accordance with the standards set forth in the policy after full disclosure of the related person's interests in the transaction. As appropriate for the circumstances, the policy provides that the audit committee will review and consider:

- the related person's interest in the related person transaction;
- the approximate dollar value of the amount involved in the related person transaction;
- the approximate dollar value of the amount of the related person's interest in the transaction without regard to the amount of any profit or loss;
- whether the transaction was undertaken in the ordinary course of business of our company;
- whether the transaction with the related person is proposed to be, or was, entered into on terms no less favorable to us than the terms that could have been reached with an unrelated third party;
- the purpose of, and the potential benefits to us of, the transaction; and
- any other information regarding the related person transaction or the related person in the context of the proposed transaction that would be material to investors in light of the circumstances of the particular transaction.

The policy provides that the audit committee will review all relevant information available to it about the related person transaction. The policy provides that the audit committee may approve or ratify the related person transaction only if the audit committee determines that, under all of the circumstances, the transaction is in, or is not inconsistent with, our best interests. The policy provides that the audit committee may, in its sole discretion, impose such conditions as it deems appropriate on us or the related person in connection with approval of the related person transaction.

No related person transactions were brought to the attention of the audit committee for consideration in 2017.

Item 14. Principal Accountant Fees and Services

The following table summarizes the fees Ernst & Young LLP, our independent registered public accounting firm, billed to us for each of the last two fiscal years.

Fee Category	2017	2016
Audit Fees [1]	$ 569,713	$ 423,535
Audit-Related Fees	—	—
Tax Fees [2]	48,450	37,960
All Other Fees [3]	2,000	2,000
Total Fees	$ 620,163	$ 463,495

(1) Audit fees for 2017 and 2016 consist of fees for the audit of our consolidated financial statements and the review of our interim financial statements.

(2) Tax fees consists of fees incurred for tax compliance and tax return preparation. Tax fees for 2017 and 2016 also include fees incurred in connection with preparation of an ownership analysis pursuant to Section 382 of the Internal Revenue Code to quantify any limitations on the availability of net operating loss carryforwards to offset taxable income.

(3) All Other Fees represents payment for access to the Ernst & Young LLP online accounting research database.

Pre-approval Policy and Procedures

The audit committee of our Board of Directors has adopted policies and procedures for the pre-approval of audit and non-audit services for the purpose of maintaining the independence of our independent auditor. We may not engage our independent auditor to render any audit or non-audit service unless either the service is approved in advance by the audit committee, or the engagement to render the service is entered into pursuant to the audit committee's pre-approval policies and procedures. Notwithstanding the foregoing, pre-approval is not required with respect to the provision of services, other than audit, review or attest services, by the independent auditor if the aggregate amount of all such services is no more than 5% of the total amount paid by us to the independent auditor during the fiscal year in which the services are provided, such services were not recognized by us at the time of the engagement to be non-audit services and such services are promptly brought to the attention of the audit committee and approved prior to completion of the audit by the audit committee.

From time to time, our audit committee may pre-approve services that are expected to be provided to us by the independent auditor during the following 12 months. At the time such pre-approval is granted, the audit committee must identify the particular pre-approved services in a sufficient level of detail so that our management will not be called upon to make a judgment as to whether a proposed service fits within the pre-approved services and, at each regularly scheduled meeting of the audit committee following such approval, management or the independent auditor shall report to the audit committee regarding each service actually provided to us pursuant to such pre-approval.

During our 2017 and 2016 fiscal years, no services were provided to us by Ernst & Young LLP or any other accounting firm other than in accordance with the pre-approval policies and procedures described above.

Part IV

Item 15. Exhibits and Financial Statement Schedules

(1) Financial Statements

Our consolidated financial statements are set forth in Part II, Item 8 of this Annual Report on Form 10-K and are incorporated herein by reference.

(2) Financial Statement Schedules

Schedules have been omitted since they are either not required or not applicable or the information is otherwise included herein.

(3) Exhibits

The exhibits filed as part of this Annual Report on Form 10-K are listed below.

Item 16. Form 10-K Summary

Not applicable.

Exhibit Index

Exhibit number	Description
3.1	Restated Certificate of Incorporation of the Registrant (incorporated by reference to Exhibit 3.1 to the Registrant's current report on Form 8-K (File No. 001-36310) filed with the SEC on February 20, 2014)
3.2	Amended and Restated Bylaws of the Registrant (incorporated by reference to Exhibit 3.2 to the Registrant's current report on Form 8-K (File No. 001-36310) filed with the SEC on February 20, 2014)
3.3	Amendment to Amended and Restated Bylaws of the Registrant (incorporated by reference to Exhibit 3.3 to the Registrant's previous Annual Report on Form 10-K, filed with the SEC on March 6, 2017)
4.1	Specimen certificate evidencing shares of common stock (incorporated by reference to Exhibit 4.1 to the Registrant's registration statement on Form S-1 (File No. 333-193335), filed with the SEC on February 3, 2014)
10.1	Third Amended and Restated Registration Rights Agreement, dated as of June 1, 2009, as amended (incorporated by reference to Exhibit 10.1 to the Registrant's registration statement on Form S-1 (File No. 333-193335), filed with the SEC on January 13, 2014)
10.2	Warrant to purchase shares of Series C Convertible Preferred Stock issued by the Registrant to Hercules Technology Growth Capital, Inc. (incorporated by reference to Exhibit 10.2 to the Registrant's registration statement on Form S-1 (File No. 333-193335), filed with the SEC on January 13, 2014)
10.3 #	Amended and Restated 2006 Stock Option and Grant Plan, as amended (incorporated by reference to Exhibit 10.3 to the Registrant's registration statement on Form S-1 (File No. 333-193335), filed with the SEC on January 13, 2014)
10.4 #	Form of Incentive Stock Option Agreement under 2006 Stock Option and Grant Plan (incorporated by reference to Exhibit 10.4 to the Registrant's registration statement on Form S-1 (File No. 333-193335), filed with the SEC on January 13, 2014)
10.5 #	Form of Nonstatutory Stock Option Agreement under 2006 Stock Option and Grant Plan (incorporated by reference to Exhibit 10.5 to the Registrant's registration statement on Form S-1 (File No. 333-193335), filed with the SEC on January 13, 2014)
10.6 #	2014 Stock Incentive Plan (incorporated by reference to Exhibit 10.6 to the Registrant's registration statement on Form S-1 (File No. 333-193335), filed with the SEC on February 3, 2014)
10.7 #	Form of Incentive Stock Option Agreement under 2014 Stock Incentive Plan (incorporated by reference to Exhibit 10.7 to the Registrant's registration statement on Form S-1 (File No. 333-193335), filed with the SEC on February 3, 2014)
10.8 #	Form of Nonstatutory Stock Option Agreement under 2014 Stock Incentive Plan (incorporated by reference to Exhibit 10.8 to the Registrant's registration statement on Form S-1 (File No. 333-193335), filed with the SEC on February 3, 2014)
10.9 #*	Form of Employment Agreement by and between the Registrant and each of its executive officers
10.10*	Lease Agreement, dated as of December 21, 2017, by and between the Registrant and HCP/King Hayden Campus LLC

Exhibit number	Description
10.11 #	Form of Restricted Stock Unit Award Granted under 2014 Stock Incentive Plan (incorporated by reference to Exhibit 10.1 to the Registrant's Current Report on Form 8-K (File No. 001-36310), filed with the SEC on July 10, 2017)
10.12	Asset Purchase Agreement, dated March 3, 2017, by and between the Registrant and Vertex Pharmaceuticals (Europe) Ltd., as Buyer, and Vertex Pharmaceuticals Inc., as Guarantor (incorporated by reference to Exhibit 10.12 to the Registrant's previous Annual Report on Form 10-K, filed with the SEC on March 6, 2017)
10.13 #	Form of Director and Officer Indemnification Agreement by and between the Registrant and each of Roger D. Tung, Nancy Stuart, Marc Becker, Jim Cassella, Ian Robert Silverman, Lynette Herscha, Richard H. Aldrich, Thomas Auchincloss, Jr., Ronald W. Barrett, Meghan FitzGerald, Peter Barton Hutt, Wilfred E. Jaeger, Christine van Heek and Wendell Wierenga (incorporated by reference to Exhibit 10.13 to the Registrant's registration statement on Form S-1 (File No. 333-193335), filed with the SEC on January 13, 2014)
10.14	Lease Agreement, dated as of February 12, 2008, by and between the Registrant and One Ledgemont LLC (incorporated by reference to Exhibit 10.15 to the Registrant's registration statement on Form S-1 (File No. 333-193335), filed with the SEC on January 13, 2014)
10.15	Amendment of Lease, dated as of August 6, 2014, by and between the Registrant and 128 Spring Street Lexington, LLC (incorporated by reference to Exhibit 10.4 to the Registrant's quarterly report on Form 10-Q (File No. 001-36310), filed with the SEC on August 12, 2014)
10.16 †	Development and License Agreement, dated as of February 24, 2012, between the Registrant and Avanir Pharmaceuticals, Inc. (incorporated by reference to Exhibit 10.16 to the Registrant's registration statement on Form S-1 (File No. 333-193335), filed with the SEC on February 3, 2014)
10.17 †	Development and License Agreement, dated as of February 26, 2013, between the Registrant and Jazz Pharmaceuticals Ireland Limited (incorporated by reference to Exhibit 10.17 to the Registrant's registration statement on Form S-1 (File No. 333-193335), filed with the SEC on February 3, 2014)
10.18 †	Amendment No. 1, dated February 26, 2015, to Development and License Agreement dated February 26, 2013 by and between the Registrant and Jazz Pharmaceuticals Ireland Limited (incorporated by reference to Exhibit 10.1 to the Registrant's quarterly report on Form 10-Q (File No. 001-36310), filed with the SEC on May 11, 2015)
10.19 †	Master Development and License Agreement, dated as of April 4, 2013, among the Registrant, Celgene International Sàrl and Celgene Corporation (incorporated by reference to Exhibit 10.18 to the Registrant's registration statement on Form S-1 (File No. 333-193335), filed with the SEC on February 3, 2014)
10.20 †	Patent Assignment Agreement, dated September 8, 2011, by and between the Registrant and Auspex Pharmaceuticals, Inc. (incorporated by reference to Exhibit 10.2 to the Registrant's quarterly report on Form 10-Q (File No. 001-36310), filed with the SEC on May 11, 2015)
10.21 #	Summary of Executive Bonus Program (incorporated by reference to Exhibit 10.19 to the Registrant's registration statement on Form S-1 (File No. 333-193335), filed with the SEC on January 13, 2014)
10.22 #*	Summary of Director Compensation Program
21.1*	Subsidiaries of the Registrant
23.1*	Consent of Ernst & Young LLP
31.1*	Chief Executive Officer—Certification pursuant to Rule 13a-14(a) of the Securities Exchange Act of 1934, as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002

31.2*	Chief Financial Officer—Certification pursuant to Rule 13a-14(a) of the Securities Exchange Act of 1934, as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002
32.1**	Chief Executive Officer—Certification pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002
32.2**	Chief Financial Officer—Certification pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002
101.INS*	XBRL Instance Document
101.SCH*	XBRL Taxonomy Extension Schema Document
101.CAL*	XBRL Taxonomy Extension Calculation Linkbase Document
101.DEF*	XBRL Taxonomy Extension Definition Linkbase Document
101.LAB*	XBRL Taxonomy Extension Label Linkbase Document
101.PRE*	XBRL Taxonomy Extension Presentation Linkbase Document

* Filed herewith.

** Furnished herewith.

† Confidential treatment requested as to certain portions, which portions have been omitted and filed separately with the Securities and Exchange Commission.

Management contracts or compensatory plans or arrangements required to be filed as an exhibit hereto pursuant to Item 15(a) of Form 10-K.

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized, on March 1, 2018.

CONCERT PHARMACEUTICALS, INC.

By: /s/ Roger D. Tung

Roger D. Tung, Ph.D.
President and Chief Executive Officer

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed below by the following persons on behalf of the registrant and in the capacities and on the dates indicated:

Signature	Title	Date
/s/ Roger D. Tung Roger D. Tung, Ph.D.	Director, President and Chief Executive Officer (Principal Executive Officer)	March 1, 2018
/s/ Marc Becker Marc Becker	Chief Financial Officer (Principal Financial Officer)	March 1, 2018
/s/ Ryan Lynch Ryan Lynch	Corporate Controller (Principal Accounting Officer)	March 1, 2018
/s/ Richard H. Aldrich Richard H. Aldrich	Chairman	March 1, 2018
/s/ Thomas G. Auchincloss Thomas G. Auchincloss	Director	March 1, 2018
/s/ Ronald W. Barrett Ronald W. Barrett, Ph.D.	Director	March 1, 2018
/s/ Meghan FitzGerald Meghan FitzGerald, Ph.D.	Director	March 1, 2018
/s/ Christine van Heek Christine van Heek	Director	March 1, 2018
/s/ Peter Barton Hutt Peter Barton Hutt	Director	March 1, 2018
/s/ Wilfred E. Jaeger Wilfred E. Jaeger, M.D.	Director	March 1, 2018
/s/ Wendell Wierenga Wendell Wierenga, Ph.D.	Director	March 1, 2018

Exhibit 10.9

Form of Employment Agreement

[Date]

[Name and Address]

Dear [Name]:

This agreement defines the terms of your employment as _____ of Concert Pharmaceuticals, Inc. (the "***Company*** "or "***Concert*** "and, with you, the "***Parties*** ") reporting to the Company's Chief Executive Officer, effective as of _____ (the "***Effective Date*** "). You agree to continue to perform the duties of your position and such other duties as the Board may reasonably assign to you from time to time.

1. **Salary.** You will receive annualized base salary of $_____ per year (as in effect from the Effective Date), payable in accordance with the regular payroll practices of the Company and less applicable taxes and withholdings, as in effect from time to time. The base salary shall be subject to increase from time to time by the Compensation Committee of the Board (the "***Compensation Committee***") in its exclusive discretion.

2. **Bonus.** During your employment, you may be eligible for an annual discretionary performance bonus in addition to your base salary. Bonus compensation in any year, if any, will be based on your performance and/or that of the Company, in accordance with a general bonus program to be established by the Board (and administered by the Compensation Committee) and will be payable not later than two and one-half months following the calendar year, except as the bonus program may from time to time provide.

3. **Benefits; Vacation.** You will be entitled to participate in all employee benefit plans from time to time in effect for employees of the Company generally. Your participation will be subject to the terms of the applicable plan documents and generally applicable Company policies. Benefits are subject to change at any time at the Company's sole discretion. You will remain eligible to accrue three weeks' paid vacation in each calendar year (or such greater amount as is generally made available in accordance with the Company's policies from time to time in effect), in addition to holidays observed by the Company. Vacation may be taken at such times and intervals as you shall determine, subject to the business needs of the Company, and otherwise shall be subject to the policies of the Company, as in effect from time to time.

4. **Expense Reimbursement.** The Company will pay or reimburse you for all and customary reasonable out-of-pocket business expenses incurred or paid by you in the performance of your duties and responsibilities for the Company, subject to any maximum annual limit and other restrictions on such expenses set by the Company and to such reasonable substantiation and documentation as the Company may specify. Any such reimbursement that would constitute nonqualified deferred compensation subject to Section 409A of the Internal

Revenue Code of 1986, as amended ("***Section 409A*** "of the "***Code*** ") shall be subject to the following additional rules: (i) no reimbursement of any such expense shall affect your right to reimbursement of any other such expense in any other taxable year; (ii) reimbursement of the expense shall be made, if at all, not later than the end of the calendar year following the calendar year in which the expense was incurred; and (iii) the right to reimbursement shall not be subject to liquidation or exchange for any other benefit.

5. **Confidentiality Agreement.** You represent that you have complied and agree that you will continue to comply with the Employee Confidentiality, Non-Competition, and Proprietary Information Agreement between the Company and you dated _____ (the "***Confidentiality Agreement***"). It is understood and agreed that a breach by you of the Confidentiality Agreement would be a material breach of this Agreement.

6. **At-Will; Timing for Termination; Accrued Benefits.** This employment letter is not intended to create or constitute an employment agreement or contract (express or implied) between you and the Company for a fixed term. It is also important for you to understand that Massachusetts is an "at will" employment state. This means that you will have the right to terminate your employment relationship with the Company at any time for any reason, although you are requested to give at least two weeks' notice. Similarly, the Company will have the right to terminate its employment relationship with you at any time for any reason. You may terminate your employment hereunder for Good Reason (as defined below) by providing notice to the Company of the condition giving rise to the Good Reason no later than 90 days following the occurrence of the condition, by giving the Company 30 days to remedy the condition and by terminating employment for Good Reason within 30 days thereafter if the Company fails to remedy the condition. Upon your termination, the Company will pay on the date of termination any base salary earned but not paid through the date of termination and pay for any vacation time accrued but not used to that date. In addition, the Company will pay you any bonus that has been awarded to you and earned, but not yet paid on the termination of your employment (together with the preceding sentence, the "***Accrued Benefits*** "). In the event of any termination of your employment, other than a termination under Section 7 or as provided for COBRA under Section 7(c), the Company shall have no obligation to you under this Agreement other than with respect to the Accrued Benefits.

7. **Termination without Cause; Termination for Good Reason.**

(a) **Severance Pay.** A termination by you for Good Reason, or any termination of your employment by the Company (other than for Cause, as defined below, death, or inability to perform as a result of physical or mental infirmity ("***disability"***) shall entitle you to 12 months of severance pay (the "***Severance Pay"***) and the other compensation provided in this section, as well as to the Accrued Benefits. The Severance Pay shall be calculated on the basis of your base salary as of the date the Company gives you notice of your termination and shall be exclusive of any bonus or benefit payments. The Company will provide the Severance Pay in the form of salary continuation in accordance with the normal payroll practices of the Company, beginning with the Company's next regular payroll period following the Effective Release Date (as defined below), with the first payment including any amounts that would have been paid between the termination date and the Effective Release Date if the payments had commenced on the termination date and with the remaining payments made proportionately over the remainder of the 12 month severance period. The receipt of any severance benefits provided for under this Section 7 or otherwise shall be dependent upon your delivery to the Company, within 60 days following the date of termination of employment, of an effective general release of claims in a form provided by the Company; provided, however, that if the last day of the 60 day period falls in the calendar year following the year of your date of termination, the severance payments shall be paid or commence on the first payroll period of such subsequent calendar year following the Effective Release Date. The date on which your release of claims becomes effective is the "***Effective Release Date.***"

(b) **COBRA.** In addition to Severance Pay, if you are participating in the Company's group health plan and/or dental plan at the time your

employment ends and you exercise the right to continue participation in those plans under the federal law known as COBRA, or any successor law and if your employment has ended for a reason other than resignation without Good Reason or termination for Cause, the Company will continue to pay the full premium for such coverage that is applicable for active and similarly-situated employees who receive the same type of coverage (single, family, or other) until the earlier of (i) the end of the 12th month after your employment ends or (ii) the date your COBRA continuation coverage expires, unless the Company's providing payments for COBRA will violate the nondiscrimination requirements of applicable law, in which case this benefit will not apply.

(c) **Effect of Change of Control.** If a Change of Control (as defined below) occurs and if, within one year following such Change of Control, the Company or any successor thereto terminates your employment other than for Cause, or you terminate your employment for Good Reason, then, in addition to the Severance Pay, you will receive an amount equal to the greater of (i) your then current target bonus or (ii) the actual bonus paid to you for the immediate preceding calendar year (payable ratably in accordance with the Severance Pay). If the Change of Control is a 409A Change of Control Event (as defined below), in lieu of installments, the Severance Pay will be paid in a single lump sum in the Company's next regular payroll period following the Effective Release Date (subject to the same delay provided above where the 60 day period ends in the following year). A "***409A Change of Control Event*** "is a "change in the ownership or effective control" of the Company or "change in the ownership of a substantial portion of the assets" of the Company within the meaning of Treasury Regulation § 1.409A-3(i)(5). In addition, if a Change of Control occurs and if, within one year following such Change of Control, (a) the Company or any successor thereto terminates your employment other than for Cause or your employment ends on death or disability, or (b) you terminate your employment for Good Reason, then all stock options held by you at such time shall immediately vest in full, notwithstanding any contrary provision in any agreement evidencing any such stock option.

(d) **Definitions.**

i. For purposes of this Agreement, "***Cause*** "shall include (i) your conviction or plea of guilty or *nolo contendre* to a crime involving moral turpitude which adversely affects your ability to perform your obligations to the Company or the business activities, reputation, goodwill or image of the Company or to a felony, (ii) your deliberate dishonesty or breach of fiduciary duty which could be reasonably expected to or does cause material loss, damage or injury to the Company, (iii) your material breach of the terms of this agreement or your failure or refusal to carry out any material tasks assigned to you by the Company in accordance with the terms hereof, which breach or failure (only as to those susceptible to cure) continues for a period of more than ten days after your receipt of written notice thereof and which could be reasonably expected to or does cause material loss, damage or injury to the Company, (iv) the commission by you of any act of fraud, embezzlement or deliberate disregard of a rule or policy of the Company known to you or contained in a policy and procedure manual provided to you which could be reasonably expected to or does cause material loss, damage or injury to the Company, or (v) the material breach or threatened breach by you of any of the provisions of the Confidentiality Agreement which could be reasonably expected to or does cause material loss, damage or injury to the Company. ("***Company***" for purposes of this section, shall include the Company and any Company subsidiary.)

ii. "***Good Reason*** "shall mean, without your consent: (i) material diminution in the nature or scope of your responsibilities, duties or authority, provided that neither of the following (x) or (y) shall constitute Good Reason: (x) the Company's failure to continue your appointment or election as a director or officer of any of its Affiliates nor (y) any diminution in the nature or scope of your responsibilities, duties or authority that is reasonably related to a diminution of the business of the Company or any of its Affiliates, other than any such diminution resulting from the sale or transfer of any or all of the assets of the Company or any of its Affiliates; (ii) a material reduction in your base salary other than one temporary reduction of not more than 120 days and not in excess of 20% of your base salary in connection with and in proportion to a general reduction of the base salaries of the Company's executive officers; (iii) relocation of your office more than 35 miles from Lexington, Massachusetts; or (iv) material breach by the Company of any material provision of this Agreement or any other service-providing agreement between the Company or any of its Affiliates and you.

iii. "***Change of Control*** "shall mean (i) the acquisition of beneficial ownership (as defined in Rule 13d-3 under the Exchange Act) directly or indirectly by any "person"(as such term is used in Sections 13(d) and 14(d) of the Exchange Act), of securities of the Company representing a majority or more of the combined voting power of the Company's then outstanding securities, other than an acquisition of securities for investment purposes pursuant to a bona fide financing of the Company; (ii) a merger or consolidation of the Company with any other corporation in which the holders of the voting securities of the Company prior to the merger or consolidation do not own more than 50% of the total voting securities of the surviving corporation; (iii) the sale or disposition by the Company of all or substantially all of the Company's assets other than a sale or disposition of assets to an entity whose equity interests are held, directly or indirectly, entirely by the same persons and in the same proportions as the equity interests of the Company; or (iv) a change in the composition of the Board that results, during any one year period, in the Continuing Directors' no longer constituting a majority of the Board (or, if applicable, the board of directors of a successor corporation to the Company), where the term "***Continuing Director*** "means at any date a member of the Board (x) who was a member of the Board on _____ or (y) who was nominated or elected subsequent to such date by at least a majority of the directors who were Continuing Directors at the time of such nomination or election or whose election to the Board was recommended or endorsed by at least a majority of the directors who were Continuing Directors at the time of such nomination or election; *provided, however* , that there shall be excluded from this clause (y) any individual whose initial assumption of office after January 10, 2014 occurred as a result of an actual or threatened election contest with respect to the election or removal of directors or other actual or threatened solicitation of proxies or consents, by or on behalf of a person other than the Board.

8. **Withholdings; Section 409A.** Anything to the contrary notwithstanding, (a) all payments required to be made by the Company hereunder to you shall be subject to the withholding of such amounts, if any, relating to tax and other payroll deductions as the Company may reasonably determine it should withhold pursuant to any applicable law or regulation, and (b) if and to the extent any portion of any payment, compensation or other benefit provided to you in connection with your employment termination is determined to constitute "nonqualified deferred compensation" within the meaning of Section 409A and you are a specified employee as defined in Section 409A(a)(2)(B)(i), as determined by the Company in accordance with its procedures, by which determination you hereby agree that you are bound, such portion of the payment, compensation or other benefit shall not be paid before the earlier of (i) the expiration of the six month period measured from the date of your "separation from service"(as determined under Section 409A) or (ii) the tenth day following the date of your death following such separation from service (the "***New Payment Date*** "). The aggregate of any payments that otherwise would have been paid to you during the period between the date of separation from service and the New Payment Date shall be paid to you in a lump sum in the first payroll period beginning after such New Payment Date, and any remaining payments will be paid on their original schedule. For purposes of this Agreement, (i) each amount to be paid or benefit to be provided shall be construed as a separate identified payment for purposes of Section 409A, (ii) neither you nor the Company shall have the right to accelerate or defer any payment or benefit hereunder unless permitted or required by Section 409A, and (iii) any payments that are due within the "short term deferral period" as defined in Section 409A or paid in a manner consistent with Treas. Reg. § 1.409A-1(b)(9)(iii) shall not be treated as deferred compensation unless applicable law requires otherwise. The terms of this employment letter are intended to be compliant with, or exempt from, Section 409A; provided, however, that the Company shall have no liability to you or to any other person in the event that the employment letter terms are determined not to be so compliant or exempt.

9. **Parachute Taxation.** The Company will make any payments due to you without regard to whether Section 280G of the Code would limit or preclude the deductibility of such payments (or any other payments or benefits) and without regard to whether such payments would subject you to the federal excise tax levied on certain "excess parachute payments" under Section 4999 of the Code; provided, however, that if the Total After-Tax Payments (as defined below) would be increased by the reduction or elimination of any payment and/or other benefit (including the vesting of any equity awards), then the amounts payable under this Agreement or otherwise will be reduced or eliminated as follows, as determined by the Company, in the following order: (i) nonacceleration of any stock options whose exercise price is at or above the fair market value of the Company's common stock as determined in the discretion of the Compensation Committee (taking into account, as appropriate, the proceeds that would be received in connection with the event covered by Section 4999) ("***Underwater Options*** "), (ii) nonacceleration of any stock options other than Underwater Options, (iii) any vesting or distribution of restricted stock or restricted stock units, (iv) any other taxable benefits, (v) any nontaxable benefits, and (vi) the cash severance due under Section 7(a) above. Within each category described in clauses (i), (ii), and (iii), reductions or eliminations shall be made in reverse order beginning with vesting or distributions that are to be paid the farthest in time from the date of the event covered by Section 4999. The Company's independent, certified public accounting firm will determine whether and to what extent payments or vesting under this Agreement are required to be reduced in accordance with the preceding sentence. If there is an underpayment or overpayment under this Agreement (as determined after the application of this paragraph), the amount of such underpayment or overpayment will be immediately paid to you or refunded by you, as the case may be, with interest at the applicable federal rate provided for in Section 7872(f)(2) of the Code. For purposes of this Agreement, "***Total After-Tax Payments*** "means the total of all "parachute payments"(as that term is defined in Section 280G(b)(2) of the Code) made to you or for your benefit (whether made under the Agreement or otherwise), after reduction for all applicable federal taxes (including the tax described in Section 4999 of the Code).

10. **Miscellaneous.**

(a) ***Notices.*** All notices required or permitted under this Agreement must be in writing and will be deemed effective upon personal delivery or three business days following deposit in a United States Post Office, by certified mail, postage prepaid, or one business day after it is sent for next-business day delivery via a reputable nationwide overnight courier service addressed in the case of notice to the Company at its then principal headquarters (with copies to the Chairman of the Board and the Company's General Counsel, which will not constitute notice), and in the case of notice to you to the current address on file with the Company. Either Party may change the address to which notices are to be delivered by giving notice of such change to the other Party in the manner set forth in this Section 10(a)

(b) ***No Mitigation.*** You are not required to seek other employment or otherwise mitigate the value of any severance benefits contemplated by this Agreement, nor will any such benefits be reduced by any earnings or benefits that you may receive from any other source. Notwithstanding any other provision of this Agreement, any sum or sums paid under this Agreement will be in lieu of any amounts to which you may otherwise be entitled under the terms of any severance plan, policy, program, agreement or other arrangement sponsored by the Company or an affiliate of the Company.

(c) ***Waiver of Jury Trial.*** TO THE EXTENT NOT PROHIBITED BY APPLICABLE LAW THAT CANNOT BE WAIVED, THE PARTIES HEREBY WAIVE, AND COVENANT THAT THEY WILL NOT ASSERT (WHETHER AS PLAINTIFF, DEFENDANT OR OTHERWISE), ANY RIGHT TO TRIAL BY JURY IN ANY ACTION, SUIT OR OTHER PROCEEDING ARISING IN WHOLE OR IN PART UNDER OR IN CONNECTION WITH THIS AGREEMENT OR THE RELEASE IT CONTEMPLATES, WHETHER NOW EXISTING OR HEREAFTER ARISING, AND WHETHER SOUNDING IN CONTRACT, TORT OR OTHERWISE. THE PARTIES AGREE THAT ANY PARTY MAY FILE A COPY OF THIS PARAGRAPH WITH ANY COURT AS WRITTEN EVIDENCE OF THE KNOWING, VOLUNTARY AND BARGAINED-FOR AGREEMENT AMONG THE PARTIES IRREVOCABLY TO WAIVE THEIR RIGHTS TO TRIAL BY JURY IN ANY PROCEEDING WHATSOEVER BETWEEN THEM RELATING TO THIS AGREEMENT OR TO ANY OF THE MATTERS CONTEMPLATED UNDER THIS AGREEMENT, RELATING TO YOUR EMPLOYMENT, OR COVERED BY THE CONTEMPLATED RELEASE.

(d) ***Severability.*** Each provision of this Agreement is intended to be interpreted in such manner as to be effective and valid under applicable law, but if any provision of this Agreement is held to be prohibited by or invalid under applicable law, such provision will be ineffective only to the extent of such prohibition or invalidity, without invalidating the remainder of such provision or the remaining provisions of this Agreement. Moreover, if an arbitrator or a court of competent jurisdiction determines any of the provisions contained in this Agreement to be unenforceable because the provision is excessively broad in scope, whether as to duration, activity, geographic application, subject or otherwise, it will be construed, by limiting or reducing it to the extent legally permitted, so as to be enforceable to the extent compatible with then applicable law to achieve the intent of the Parties.

(e) ***Assignment.*** This Agreement will be binding upon and will inure to the benefit of (i) your heirs, beneficiaries, executors and legal representatives upon your death and (ii) any successor of the Company. Any such successor of the Company will be treated as substituted for the Company under the terms of this Agreement for all purposes. The Company may assign this Agreement without your consent, and such an assignment will not terminate your employment for purposes of triggering your entitlement to severance. You specifically agree that any assignment may include rights under the Confidentiality Agreement without requiring your consent. As used herein, "***successor*** "will mean any person, firm, corporation or other business entity that at any time, whether by purchase, merger or otherwise, directly or indirectly acquires all or substantially all of the assets or business of the Company and its subsidiaries. None of your rights to receive any form of compensation payable under this Agreement will be assignable or transferable except through a testamentary disposition or by the laws of descent and distribution upon your death or as provided in Section 10(k). Any attempted assignment, transfer, conveyance or other disposition of any interest in your rights to receive any form of compensation hereunder, except as provided in the preceding sentence, will be null and void.

(f) ***No Oral Modification, Waiver, Cancellation or Discharge.*** This Agreement may only be amended, canceled or discharged or any obligations thereunder waived through a writing signed by you and the Board or any duly authorized executive officer of the Company.

(g) ***No Conflict of Interest.*** You confirm that you have fully disclosed to the Company and its affiliates, to the best of your knowledge, any circumstances under which you, your immediate family and other persons who reside in your household have or may have a conflict of interest with the Company. You further agree to fully disclose to the Company any such circumstances that might arise during your employment upon your becoming aware of such circumstances.

(h) ***Other Agreements.*** You hereby represent that your performance of all the terms of this Agreement and the performance of your duties as an employee of the Company does not and will not breach any agreement to keep in confidence proprietary information, knowledge or data acquired by you in confidence or in trust prior to your employment with the Company. You also represent that you are not a party to or subject to any restrictive covenants, legal restrictions, policies, commitments or other agreements in favor of any entity or person that would in any way preclude, inhibit, impair or limit your ability to perform your obligations under this Agreement, including noncompetition agreements or nonsolicitation agreements, and you further represent that your performance of the duties and obligations under this Agreement does not violate the terms of any agreement to which you are a party. You agree that you will not enter into any agreement or commitment or agree to any policy that would prevent or unreasonably hinder your performance of duties and obligations under this Agreement.

(i) ***Disclosure of this Agreement.*** You acknowledge that the Company may provide persons or entities who may employ or engage you with a

copy of the Confidentiality Agreement (or portions thereof) to highlight your continuing obligations to the Company. You also acknowledge that the Company may be obligated to disclose this Agreement or any portion thereof to satisfy applicable laws and regulations.

(j) ***Survivorship.*** The respective rights and obligations of the Company and you hereunder will survive any termination of your employment to the extent necessary to preserve the intent of such rights and obligations.

(k) ***Beneficiaries.*** You will be entitled, to the extent applicable law permits, to select and change the beneficiary or beneficiaries to receive any compensation or benefit payable hereunder upon your death by giving the Company written notice thereof in a manner consistent with the terms of any applicable plan documents. If you die, severance then due or other amounts due hereunder will be paid to your designated beneficiary or beneficiaries or, if none are designated or none survive you, your estate.

(l) ***Company Policies.*** References in this Agreement to Company policies and procedures are to those policies and procedures in effect at the Effective Date, as the Company may amend them from time to time.

(m) ***Governing Law; Dispute Resolution.*** This Agreement must be construed, interpreted, and governed in accordance with the laws of the Commonwealth of Massachusetts without reference to rules relating to conflict of law. You and the Company (a) hereby irrevocably submit to the exclusive jurisdiction of the state courts of The Commonwealth of Massachusetts or the United States District Court located in The Commonwealth of Massachusetts for the purpose of any action between the Company and you arising in whole or in part under or in connection with this Agreement, (b) hereby waive, to the extent not prohibited by applicable law, and agrees not to assert, by way of motion, as a defense or otherwise, in any such action, any claim that it is not subject personally to the jurisdiction of the above-named courts, that its property is exempt or immune from attachment or execution, that any such action brought in one of the above-named courts should be dismissed on grounds of *forum non conveniens*, should be transferred or removed to any court other than one of the above-named courts, or should be stayed by reason of the pendency of some other proceeding in any other court other than one of the above-named courts, or that this Agreement or the subject matter hereof may not be enforced in or by such court, and (c) hereby agree not to commence any such action other than before one of the above-named courts. Notwithstanding the previous sentence, the Company or you may commence any action in a court other than the above-named courts solely for the purpose of enforcing an order or judgment issued by one of the above-named courts. In the event of a final judgement in the Company's favor, the Company shall be entitled to recover all of its reasonably incurred costs and attorney's fees in enforcing its rights hereunder.

(n) ***Interpretation.*** The parties agree that this Agreement will be construed without regard to any presumption or rule requiring construction or interpretation against the drafting party. References in this Agreement to "include" or "including" should be read as though they said "without limitation" or equivalent forms. References to "day" or "days" are to calendar days, unless the Agreement specifically refers to "business" days.

(o) ***Entire Agreement.*** This Agreement and any documents referred to herein, including the Confidentiality Agreement, represent the entire agreement of the Parties and will supersede any and all previous contracts, arrangements or understandings between the Company and you relating to matters covered by this Agreement.

Very truly yours,

Roger D. Tung
President and Chief Executive Officer

Agreed and Accepted:

Signature:

[Name]

Date:

Exhibit 10.10

65 HAYDEN AVENUE
LEXINGTON, MASSACHUSETTS

LEASE SUMMARY SHEET

Execution Date:	December 21, 2017
Tenant:	**CONCERT PHARMACEUTICALS, INC**., a Delaware corporation
Tenant's Mailing Address Prior to Occupancy:	99 Hayden Avenue, Suite 500 Lexington, Massachusetts 02421
Landlord:	**HCP/KING HAYDEN CAMPUS LLC**, a Delaware limited liability company
Building:	65 Hayden Avenue, Lexington, Massachusetts. The Building consists of approximately 213,005 rentable square feet, including a four-story garage with 298 spaces (the "**Garage**"). The land (the "**Land**") on which the Building and the Garage are located is described as "**Parcel Three**" and "**Parcel Four**" on Exhibit 2 attached hereto and made a part hereof.
Campus:	All of the land described on Exhibit 2 attached hereto and made a part hereof (including the Land described above), together with the Building described above, the buildings now known as and number 45 Hayden Avenue and 55 Hayden Avenue, and any other building and/or improvements constructed on the Land.

Premises:	Areas on the first (1st) and third (3rd) floors of the North portion of the Building, containing approximately 55,522 rentable square feet in the aggregate. The Premises consist of: Prime Premises, which are located on the third (3rd) floor. Chemical Storage Premises: The Chemical Storage Premises will be located within the Prime Premises. Hazardous Waste Storage Premises: The Hazardous Waste Storage Premises will be a part of the Prime Premises unless Tenant exercises its rights with respect to the First Floor Hazardous Waste Storage RFO Premises in accordance with Exhibit 11 of this Lease in which event the Hazardous Waste Storage Premises shall also be located on the first floor of the Building. Nitrogen Tank Premises: The Nitrogen Tank Premises shall be located on on the Land in the location shown on Exhibit 3. Non-HM Storage Premises: The Non-HM Storage Premises shall be located on the first (1st) floor in the vicinity of the loading dock serving the Building in the location shown on Exhibit 12. The term "**Premises**" shall mean the Prime Premises, Chemical Storage Premises, Hazardous Waste Storage Premises, Nitrogen Tank Premises, the Non-HM Storage Premises, as applicable. The Premises are shown on the Lease Plans attached hereto as Exhibit 1A, Exhibit 1B, Exhibit 3, and Exhibit 12 and made a part hereof (the "**Lease Plans**"). As appurtenant to Tenant's lease of the Premises, Tenant shall, in accordance with Section 1.7 of the Lease, have a license to install its Acid Neutralization Tank in the PH System Area, which is located in the PH System Room (which contains the PH systems of other tenants who have the right to use the PH System Room), all as shown on Exhibit 1B.
Property:	The Building, the Garage, the Land, and other improvements located on, and to be constructed on, the Land.
Parking Areas:	The parking structures (surface lots and parking decks) located on the Campus (excluding the parking areas labeled "Shire Areas" on Exhibit 3 attached hereto and made a part hereof), that Landlord provides for parking by all tenants of space on the Property, as the same may be changed, from time to time, by Landlord.
Term Commencement Date:	The earlier of (i) the date that Tenant first commences to use the Premises, or any portion thereof, for any Permitted Use or (ii) the later of: (x) the Substantial Completion, as hereinafter defined, of Landlord's Work, as defined herein, or (y) August 1, 2018 (the "**Estimated Term Commencement Date**").

Rent Commencement Dates:	Base Rent Commencement Date: The later of: (i) January 1, 2019, or (ii) the Term Commencement Date. Additional Rent Commencement Date (Tenant's Share of Operating Costs, Taxes, & Utilities): The later of: (i) November 1, 2018, or (ii) the Term Commencement Date.		
Expiration Date:	Ten (10) years after the Base Rent Commencement Date, except that if the Base Rent Commencement Date does not occur on the first day of calendar month, then the Expiration Date shall the last day of the calendar month in which the tenth anniversary of the Base Rent Commencement Date occurs.		
Extension Term(s):	Subject to Section 1.2 below, two (2) extension term(s) of five (5) year(s) each.		
Landlord's Contribution:	Up to $4,996,980.00.		
Permitted Uses:	Subject to Legal Requirements, general office, research, development and laboratory use, and other ancillary uses (including, but not limited to, vivarium uses) related to the foregoing.		
Base Rent:	**PERIOD**	**ANNUAL BASE RENT**	**MONTHLY PAYMENT**
	Commencement Date to day prior to Base Rent Commencement Date	$-0-	$-0-
	Rent Year 1	$2,776,100.00	$231,341.67
	Rent Year 2*	$2,859,383.00	$238,281.92
	Rent Year 3	$2,945,164.40	$245,430.37
	Rent Year 4	$3,033,519.40	$252,793.29
	Rent Year 5	$3,124,524.90	$260,377.08
	Rent Year 6	$3,218,260.80	$268,188.40
	Rent Year 7	$3,314,808.60	$276,234.05
	Rent Year 8	$3,414,252.80	$284,521.07
	Rent Year 9	$3,516,680.40	$293,056.70
	Rent Year 10	$3,622,180.80	$301,848.40

Rent Year:	Rent Year 1 shall be the twelve month period commencing as of the Base Rent Commencement Date, except that if the Base Rent Commencement Date occurs on other than the first day of a calendar month, then Rent Year 1 shall commence as of the Base Rent Commencement Date and shall end on the last day of the calendar year in which the first anniversary of the Base Rent Commencement Date occurs. Each Rent Year after Rent Year 1 shall be a twelve month period immediately following the preceding Rent Year.		
	*Notwithstanding anything in this Section of the Lease to the contrary, so long as there is no Event of Default (as defined in Section 20) by Tenant under this Lease, Tenant shall be entitled to an abatement of Base Rent in the total amount of $476,563.84 (the "**Abated Base Rent**") for the first two full calendar months of Rent Year 2 (the "**Base Rent Abatement Period**"). During the Base Rent Abatement Period, only Base Rent shall be abated, and all Additional Rent and other costs and charges specified in this Lease shall remain as due and payable pursuant to the provisions of this Lease.		
Operating Costs and Taxes:	See Sections 5.2 and 5.3.		
Tenant's Share:	A fraction, the numerator of which is the number of rentable square feet in the Premises and the denominator of which is the number of rentable square feet in the Building. As of the Execution Date, Tenant's Share with respect to the Premises is 26.07%.		
Security Deposit/ Letter of Credit:	One Million One Hundred Fifty-Six Thousand Seven Hundred Eight and 35/100 ($1,156,708.35) Dollars.		
Guarantor:	None.		

LIST OF EXHIBITS

EXHIBIT 1A	LEASE PLAN - PRIME PREMISES AND COMMON MECHANICAL CLOSETS
EXHIBIT 1B	LEASE PLAN - PH SYSTEM AREA AND PH SYSTEM ROOM
EXHIBIT 1C, SHEET 1	LEASE PLANS – RFO PREMISES LEASE PLAN – RFO PREMISES (SECOND FLOOR)
SHEET 2	LEASE PLAN – RFO PREMISES (THIRD FLOOR)
SHEET 3	LEASE PLAN – NON-HM STORAGE PREMISES
EXHIBIT 1D	LEASE PLAN – STROBIC FAN
EXHIBIT 2	LEGAL DESCRIPTION - LAND
EXHIBIT 3	LEASE PLAN – CURRENT PARKING AREAS AND NITROGEN PREMISES
EXHIBIT 4	WORK LETTER
EXHIBIT 4-1	INITIAL PLAN OF LANDLORD'S WORK
EXHIBIT 4-2	EQUIPMENT LIST
EXHIBIT 4-3	LANDLORD/TENANT RESPONSIBILITY MATRIX
EXHIBIT 5	EXISTING BASE BUILDING SYSTEMS AND CAPACITIES
EXHIBIT 6	FORM OF LETTER OF CREDIT
EXHIBIT 6-1	ELEVATION SHOWING LOCATION OF TENANT'S MONUMENT SIGN
EXHIBIT 7	LANDLORD'S SERVICES
EXHIBIT 8	TENANT'S HAZARDOUS MATERIALS LIST
EXHIBIT 9-1	BUILDING RULES AND REGULATIONS
EXHIBIT 9-2	CONSTRUCTION BUILDING RULES AND REGULATIONS
EXHIBIT 10	TENANT WORK INSURANCE REQUIREMENTS
EXHIBIT 11	ADDITIONAL PROVISIONS
EXHIBIT 12	PLAN--LOADING DOCKS, RECEIVING AREA, FREIGHT ELEVATORS, AND NON-HM STORAGE PREMISES
EXHIBIT 13	LIST OF REQUIRED REMOVABLES
EXHIBIT 14-1	MASTER DEED OF THE HAYDEN SCIENCE CENTER CONDOMINIUM
EXHIBIT 14-2	DECLARATION OF TRUST OF THE HAYDEN SCIENCE CENTER CONDOMINIUM
EXHIBIT 14-3	THE HAYDEN SCIENCE CENTER CONDOMINIUM PLANS

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THIS INDENTURE OF LEASE (this "**Lease**") is hereby made and entered into on the Execution Date by and between Landlord and Tenant.

Each reference in this Lease to any of the terms and titles contained in any Exhibit attached to this Lease shall be deemed and construed to incorporate the data stated under that term or title in such Exhibit. All capitalized terms not otherwise defined herein shall have the meanings ascribed to them as set forth in the Lease Summary Sheet which is attached hereto and incorporated herein by reference.

1. LEASE GRANT; TERM; APPURTENANT RIGHTS; EXCLUSIONS

1.1 Lease Grant. Landlord hereby leases to Tenant, and Tenant hereby leases from Landlord, the Premises upon and subject to terms and conditions of this Lease, for a term of years commencing on the Term Commencement Date and, unless earlier terminated or extended pursuant to the terms hereof, ending on the Expiration Date (the "**Initial Term**"; the Initial Term and any duly exercised Extension Terms are hereinafter collectively referred to as the "**Term**").

1.2 Extension Terms.

(a) Provided that the following conditions, which may be waived by Landlord in its sole discretion, are satisfied (i) Tenant, an Affiliated Entity (hereinafter defined) and/or a Successor (hereinafter defined) is/are then occupying sixty (60%) percent of the Premises; and (ii) no Event of Default nor an event which, with the passage of time and/or the giving of notice would constitute an Event of Default has occurred (1) as of the date of the Extension Notice (hereinafter defined), and (2) at the commencement of the applicable Extension Term (hereinafter defined), Tenant shall have the option to extend the Term for two (2) additional terms of five (5) years each (each, an "**Extension Term**"), commencing as of the expiration of the Initial Term, or the prior Extension Term, as the case may be. Tenant must exercise such option to extend, if at all, by giving Landlord written notice (the "**Extension Notice**") on or before the date that is nine (9) months prior to the expiration of the then-current term of this Lease, *time being of the essence*. Upon the timely giving of such notice, the Term shall be deemed extended upon all of the terms and conditions of this Lease, except that Base Rent during each Extension Term shall be calculated in accordance with this Section 1.2, Landlord shall have no obligation to construct or renovate the Premises, and Tenant shall have one (1) fewer option to extend the Term. If Tenant fails to give timely notice, as aforesaid, Tenant shall have no further right to extend the Term. Notwithstanding the fact that Tenant's proper and timely exercise of such option to extend the Term shall be self-executing, the parties shall promptly execute a mutually agreed upon lease amendment reflecting such Extension Term after Tenant exercises such option. The execution of such lease amendment shall not be deemed to waive any of the conditions to Tenant's exercise of its rights under this Section 1.2.

(b) The Base Rent during each Extension Term (the "**Extension Term Base Rent**") shall be determined in accordance with the process described hereafter. Extension Term Base Rent shall be the fair market rental value of the Premises then demised to Tenant as of the

commencement of the applicable Extension Term as determined in accordance with the process described below, for renewals and new leases of Class A office/research/laboratory building/campus in the Lexington/Waltham real estate market ("**Market Area**") and all relevant factors, including, without limitation, tenant improvement funds and free rent, to be taken into account. Landlord and Tenant acknowledge that Tenant is paying a premium rent based on other buildings in the Market Area. Within thirty (30) days after receipt of the Extension Notice, Landlord shall deliver to Tenant written notice of its determination of the Extension Term Base Rent for the applicable Extension Term. Tenant shall, within thirty (30) days after receipt of such notice, notify Landlord in writing whether Tenant accepts or rejects Landlord's determination of the Extension Term Base Rent ("**Tenant's Response Notice**"). If Tenant fails timely to deliver Tenant's Response Notice, Landlord's determination of the Extension Term Base Rent shall be binding on Tenant.

(c) If and only if Tenant's Response Notice is timely delivered to Landlord and indicates both that Tenant rejects Landlord's determination of the Extension Term Base Rent and desires to submit the matter to arbitration, then the Extension Term Base Rent shall be determined in accordance with the procedure set forth in this Section 1.2(c). In such event, within ten (10) days after receipt by Landlord of Tenant's Response Notice indicating Tenant's desire to submit the determination of the Extension Term Base Rent to arbitration, Tenant and Landlord shall each notify the other, in writing, of their respective selections of an appraiser (respectively, "**Landlord's Appraiser**" and "**Tenant's Appraiser**"). Landlord's Appraiser and Tenant's Appraiser shall then jointly select a third appraiser (the "**Third Appraiser**") within ten (10) days of their appointment. All of the appraisers selected shall be individuals with at least ten (10) consecutive years' commercial appraisal experience for office and laboratory space in the area in which the Premises are located, shall be members of the Appraisal Institute (M.A.I.), and, in the case of the Third Appraiser, shall not have acted in any capacity for either Landlord or Tenant within five (5) years of his or her selection. The three appraisers shall determine the Extension Term Base Rent in accordance with the requirements and criteria set forth in Section 1.2(b) above, employing the method commonly known as Baseball Arbitration, whereby Landlord's Appraiser and Tenant's Appraiser each sets forth its determination of the Extension Term Base Rent as defined above, and the Third Appraiser must select one or the other (it being understood that the Third Appraiser shall be expressly prohibited from selecting a compromise figure). Landlord's Appraiser and Tenant's Appraiser shall deliver their determinations of the Extension Term Base Rent to the Third Appraiser within five (5) days of the appointment of the Third Appraiser and the Third Appraiser shall render his or her decision within ten (10) days after receipt of both of the other two determinations of the Extension Term Base Rent. The Third Appraiser's decision shall be binding on both Landlord and Tenant. Each party shall bear the cost of its own appraiser and the cost of the Third Appraiser shall be paid by the party whose determination is not selected.

1.3 Appurtenant Rights.

(a) Common Areas. Subject to the terms of this Lease and the Rules and Regulations (hereinafter defined), Tenant shall have, as appurtenant to the Premises, rights to use in common with others entitled thereto, the following areas (such areas are hereinafter referred to

as the "**Common Areas**"): (i) the common loading docks, hallways, lobby, and elevator of the Building serving the Premises, (ii) the common lavatories located on the floor(s) on which the Premises are located, (iii) common walkways and driveways necessary for access to the Building, (iv) the Parking Areas, and (v) other areas and facilities located in the Building, on the Land, or elsewhere on the Campus designated by Landlord from time to time for the common use of tenants of the Building and other entitled thereto; and no other appurtenant rights or easements. "**Rules and Regulations**" shall be defined as rules and regulations promulgated by Landlord pursuant to, and subject to, the provisions of Section 18.1 of the Lease. The three (3) loading docks, receiving area, and freight elevators shown on the attached Exhibit 12, attached hereto and incorporated herein, are available for the use of the tenants in the Building and are part of the Common Areas. Tenant and its authorized contractors and cleaning personnel shall have 24-hour access to the freight elevators and loading docks and disposal areas, subject to Landlord's reasonable security procedures and Rules and Regulations.

(b) Parking. During the Term, Landlord shall, subject to the terms hereof, make available up to one hundred thirty-nine (139) parking spaces for Tenant's use free of charge (except that the costs of maintenance and repair of the parking areas shall, subject to the provisions of Section 5.2, be included in Operating Costs) in the Parking Areas serving the Building (up to 81 parking spaces in the adjacent Garage with the balance to be located on the surface portions of the Parking Areas), of which (x) three (3) parking spaces shall be designated for visitor parking and located near the entrance of the Building and (y) three (3) parking spaces shall be designated for visitor parking and located in the adjacent Garage. The number of parking spaces in the parking areas reserved for Tenant, as modified pursuant to this Lease or as otherwise permitted by Landlord, are hereinafter referred to as the "**Parking Spaces**." Tenant shall have no right to hypothecate or encumber the Parking Spaces, and shall not sublet, assign, or otherwise transfer the Parking Spaces other than to employees of Tenant occupying the Premises or to a Successor (hereinafter defined), an Affiliated Entity (hereinafter defined), or a transferee pursuant to an approved Transfer under Section 13 of this Lease. Subject to Landlord's right to reserve parking for other tenants of the Building, said Parking Spaces will be on an unassigned, non-reserved basis, and shall be subject to such Rules and Regulations, as may be in effect for the use of the parking areas from time to time. Reserved and handicap parking spaces must be honored. Notwithstanding anything to the contrary contained herein, Landlord shall have the right during any period of time that Landlord is performing construction or maintenance work on the Campus, upon at least three (3) months' prior written notice to Tenant, to temporarily relocate all or any portion of the Parking Spaces in to other portions of the Property and/or parking areas owned, controlled or leased by Landlord and located on Hayden Avenue in Lexington. If Landlord elects to relocate Tenant's Parking Spaces, Landlord (at its sole cost and expense) shall provide, for the duration of such temporary relocation, shuttle service to and from such temporary parking location. In addition, Landlord may, at its election, implement valet parking in order to accommodate the parking needs of the Property from time to time.

(c) Rooftop Premises. During the Term, Tenant shall have the right to use a portion of the rooftop of the Building designated by Landlord (the "**Rooftop Premises**") for the installation of certain equipment approved by Landlord and purchased and installed by Tenant in

accordance with the terms of this Lease (any equipment installed within the Rooftop Premises, as the same may be modified, altered or replaced during the Term, is collectively referred to herein as "**Tenant's Rooftop Equipment**"). Landlord's approval of such equipment shall not be unreasonably withheld, conditioned or delayed provided Tenant demonstrates to Landlord's reasonable satisfaction that the proposed equipment (i) does not interfere with any base building equipment operated by Landlord on the roof; (ii) will not affect the structural integrity of the Building or impact the roof or the roof membrane in any manner; (iii) shall be adequately screened (excluding a wimax (internet) antenna) so as to minimize the visibility of such equipment; and (iv) shall be adequately sound-proofed to meet all requirements of Legal Requirements and Landlord's specified maximum decibel levels for equipment operations. Tenant shall not install or operate Tenant's Rooftop Equipment until Tenant has obtained and submitted to Landlord copies of all required governmental permits, licenses, and authorizations necessary for the installation and operation thereof. In addition, Tenant shall comply with the Tenant Construction Building Rules and Regulations set forth in Exhibit 9-2, and all future Tenant Construction Building Rules and Regulations in connection with the installation, maintenance and operation of Tenant's Rooftop Equipment. Landlord shall have no obligation to provide any services including, without limitation, electric current or gas service, to the Rooftop Premises or to Tenant's Rooftop Equipment, provided, however, that Tenant, at Tenant's sole cost, shall, subject to the provisions of this Lease (including, without limitation, Section 11 hereof) have the right to install wiring in locations designated by Landlord in order to connect Tenant's Rooftop Equipment to Tenant's electrical system serving the Prime Premises. Tenant shall be responsible for the cost of repairing and maintaining Tenant's Rooftop Equipment and the cost of repairing any damage to the Building, or the cost of any necessary improvements to the Building, caused by or as a result of the installation, replacement and/or removal of Tenant's Rooftop Equipment. Landlord makes no warranties or representations to Tenant as to the suitability of the Rooftop Premises for the installation and operation of Tenant's Rooftop Equipment. In the event that at any time during the Term, Landlord determines, in its sole but good faith business judgment, that the operation and/or periodic testing of Tenant's Rooftop Equipment interferes with the operation of the Building or the business operations of any of the occupants of the Building, then Tenant shall, upon notice from Landlord, cause all further testing of Tenant's Rooftop Equipment to occur after normal business hours (hereinafter defined).

(d) Cafeteria. During the Term, Tenant, its employees, contractors, and visitors shall have the right to use the Cafeteria, as hereinafter defined, in common with others entitled thereto (the "**Cafeteria**"). The "**Cafeteria**" shall be defined as a food services facility which provides food to tenants and occupants of the Campus. As of the Execution Date, the Cafeteria is located in Building 55. Tenant hereby acknowledges that the Cafeteria may be relocated, from time to time, to other buildings located on the Campus. A third party provider is currently contemplated to operate the Cafeteria. Any amounts paid by Landlord on account of the operation of the Cafeteria in excess of the net revenues derived from the operation of the Cafeteria shall be included in Operating Costs, as shall all of Landlord's costs of cleaning, maintaining, and repairing the Cafeteria. Card readers shall, at no cost to Tenant, be installed and maintained at appropriate access points to the Cafeteria and identification cards shall be authorized users.

(e) Fitness Center. During the Term, Tenant, its employees and visitors shall have the right to use the Fitness Center, as hereinafter defined, in common with others entitled thereto. The "**Fitness Center**" shall be a work-out facility for the use of tenants and occupants of the Campus. As of the Execution Date, the Fitness Center is located in the Building. Tenant acknowledges that the Fitness Center may be relocated, from time to time, to other buildings located on the Campus. Card readers shall, at no cost to Tenant, be installed and maintained at appropriate access points to the Fitness Center and identification cards shall be authorized users. Users of the fitness center shall be required to execute such liability waivers as Landlord shall reasonably require. Any amounts paid by Landlord on account of the operation of the Fitness Center in excess of any net revenues derived from the operation of the Fitness Center shall be included in Operating Costs, as shall all of Landlord's costs of cleaning, maintaining, and repairing the Fitness Center. If for any reason Landlord decides to cease operating a Fitness Center, then, within thirty (30) days after delivery of written notice from Landlord to Tenant of Landlord's decision, then Tenant shall no longer have the right to use the Fitness Center.

(f) Strobic Fan. In addition to Tenant's use of the Rooftop Premises for Tenant's Rooftop Equipment, as set forth in Section 1.3 (c) above, Tenant shall have the right, during the Term of the Lease, to use an existing 17,000 CFM Strobic EF Fan (the "**Strobic Fan**"). The Strobic Fan is located on the roof of the Building in the area (the "**Strobic Premises**") shown on Exhibit 1D, attached hereto and incorporated herein. Landlord shall have no obligation to provide any services including, without limitation, electric current or gas service, to the Fan Premises or to the Strobic Fan, provided, however, that Tenant, at Tenant's sole cost, shall, subject to the provisions of this Lease (including, without limitation, Section 11 hereof) have the right to install wiring in locations designated by Landlord in order to connect the Strobic Fan to Tenant's electrical system serving the Prime Premises. Tenant shall be responsible for the cost of repairing and maintaining the Strobic Fan and the Fan Premises and the cost of repairing any damage to the Building caused by the operation, replacement and/or removal of the Strobic Fan. Landlord makes no warranties or representations to Tenant as to the suitability of the Fan Premises for the installation and operation of the Strobic Fan, and the Fan Premises and the Strobic Fan shall be taken in their as-is condition. In the event Tenant determines that the Strobic Fan is no longer functioning sufficiently to meet Tenant's needs, Tenant shall have the option, at Tenant's sole cost, to either: (x) replace the Strobic Fan or (y) remove the Strobic Fan from the Fan Premises; provided, however, that in either event, Tenant shall be responsible for the cost of repairing any damage to the Building caused by such replacement or removal. Tenant shall not be obligated to remove the Strobic Fan from the roof upon the expiration or prior termination of the Term of the Lease.

1.4 Tenant's Access.

From and after the Term Commencement Date and until the end of the Term, Tenant shall have access to the Premises twenty-four (24) hours a day, seven (7) days a week, subject to Landlord's reasonable Building security requirements, causes beyond Landlord's reasonable control, Legal Requirements, the Rules and Regulations, the terms of this Lease, Force Majeure (hereinafter defined) and matters of record. Tenant and its employees shall have access to the Building after normal business hours by means of a card reader access system.

1.5 No recording // Notice of Lease. Neither party shall record this Lease. Landlord agrees to join in the execution, in recordable form, of a statutory notice of lease and/or written declaration in which shall be stated the Term Commencement Date, the Rent Commencement Date, the number and length of the Extension Term(s) and the Expiration Date, which notice of lease may be recorded by Tenant with the Middlesex South Registry of Deeds and/or filed with the Middlesex South Registry District of the Land Court, as appropriate (alternatively and collectively, the "**Registry**") at Tenant's sole cost and expense. If a notice of lease was previously recorded with the Registry, upon the expiration or earlier termination of this Lease, Landlord shall deliver to Tenant a notice of termination of lease and Tenant shall promptly execute, acknowledge, and deliver the same (together with any other instrument(s) that may be necessary in order to record and/or file same with the Registry) to Landlord for Landlord's execution and recordation with the Registry, which obligation shall survive the expiration or earlier termination of the Lease.

1.6 Exclusions. The following are expressly excluded from the Premises and reserved to Landlord: all the perimeter walls of the Premises (except the inner surfaces thereof), the Common Areas, and any space in or adjacent to the Premises used for shafts, stacks, pipes, conduits, wires and appurtenant fixtures, fan rooms, ducts, electric or other utilities, sinks or other Building facilities, and the use of all of the foregoing, except as expressly permitted pursuant to Section 1.3(a) above.

1.7 Acid Neutralization Tank.

(a) Tenant shall have a license during the Term of this Lease to install in the PH Premises Area a separate acid neutralization tank for Tenant's exclusive use ("**Tenant's Acid Neutralization Tank**") in accordance with the provisions of this Lease, including, without limitation, Section 11 hereof. Tenant shall have the right, throughout the Term of the Lease, as the same may be extended, to (i) use Tenant's Acid Neutralization Tank in accordance with Legal Requirements and (ii) subject to Force Majeure, access Tenant's Acid Neutralization Tank in the PH Premises Area 24 hours per day, 7 days per week, Tenant acknowledging, however, that since access to Tenant's Acid Neutralization Tank is only possible through the premises of another tenant, such access by Tenant must satisfy the reasonable security and confidentiality concerns of such other tenant. Tenant shall provide Landlord reasonable advance notice of each visit by any Tenant Party to Tenant's Acid Neutralization Tank, and Landlord shall have the right to have a representative escorting any Tenant Party during his or her access to Tenant's Acid Neutralization Tank. Tenant shall obtain, and maintain, all governmental permits and approvals necessary for the operation and maintenance of Tenant's Acid Neutralization Tank. Tenant shall be responsible for all costs, charges and expenses incurred from time to time in connection with or arising out of the operation, use, maintenance, repair, refurbishment, and decommissioning of Tenant's Acid Neutralization Tank.

(b) Tenant shall be responsible for assuring that the installation, maintenance, operation and removal of Tenant's Acid Neutralization Tank shall in no way damage any portion of the Building or Property. To the maximum extent permitted by Law, Tenant's Acid Neutralization Tank and all appurtenances thereto shall be at the sole risk of Tenant, and

Landlord shall, subject to Section 14.5 hereof, except in circumstances arising from Landlord's negligence or willful misconduct, have no liability to Tenant if Tenant's Acid Neutralization Tank or any appurtenant installations are damaged for any reason. Except for Landlord's negligence or willful misconduct and subject to Section 14.5, Tenant agrees to be responsible for any damage caused to the Building or Property in connection with the installation, maintenance, operation or removal of Tenant's Acid Neutralization Tank. Except with respect to Claims, to the extent caused by the negligence or willful misconduct of Landlord or any Landlord Parties, subject to Section 14.5, Tenant shall indemnify, save, defend (at Landlord's option and with counsel reasonably acceptable to Landlord) and hold the Landlord Parties, as hereinafter defined, harmless from and against any and all Claims (as hereinafter defined), including (i) diminution in value of the Premises or any portion thereof, (ii) damages for the loss of or restriction on use of rentable or usable space of the Premises, (iii) damages arising from any adverse impact on marketing of space in the Premises or any portion thereof, and (iv) sums paid in settlement of Claims that arise during or after the Term, in each case resulting from Tenant's improper use of Tenant's Acid Neutralization Tank in violation of applicable Legal Requirements. This indemnification by Tenant includes costs actually incurred by Landlord: (1) in connection with any investigation required by any Governmental Authority of site conditions, (2) in connection with any investigation reasonably required by Landlord pursuant to which it is reasonably determined that Tenant has breached its obligations with respect to Tenant's Acid Neutralization Tank, and (3) for any clean-up, remediation, and/or removal of any Hazardous Materials and/or restoration of the Property required by any Governmental Authority, in each case to the extent caused by Tenant's improper use of Tenant's Acid Neutralization Tank.

(c) Tenant shall be responsible for the installation, operation, cleanliness, maintenance and removal of Tenant's Acid Neutralization Tank and the appurtenances, all of which shall remain the personal property of Tenant, and shall be removed by Tenant at its own expense at the expiration or earlier termination of the Lease. Subject to Section 14.5, Tenant shall repair any damage caused by such removal, including the patching of any holes to match, as closely as possible, the color surrounding the area where Tenant's Acid Neutralization Tank and appurtenances were attached. Such maintenance and operation shall be performed in a manner to avoid any unreasonable interference with any other tenants or Landlord. Tenant shall take Tenant's Acid Neutralization Tank Premises "as is" in the condition in which Tenant's Acid Neutralization Tank Premises is in as of the Commencement Date, without any obligation on the part of Landlord to prepare or construct Tenant's Acid Neutralization Tank Premises for Tenant's use or occupancy. Without limiting the foregoing, Landlord makes no warranties or representations to Tenant as to the suitability of Tenant's Acid Neutralization Tank Premises for the installation and operation of Tenant's Acid Neutralization Tank. Tenant shall have no right to make any changes, alterations, additions, decorations or other improvements to Tenant's Acid Neutralization Tank Premises without Landlord's prior written consent which shall not be unreasonably withheld, conditioned or delayed. Tenant agrees to maintain Tenant's Acid Neutralization Tank in good condition and repair, reasonable wear and tear excluded.

(d) Landlord shall have no obligation to provide any services, including, without limitation, electric current, to Tenant's Acid Neutralization Tank, provided, however, that Tenant, at Tenant's cost, provided, however, that Tenant, at Tenant's sole cost, shall, subject to

the provisions of this Lease (including, without limitation, Section 11 hereof) shall have the right to install wiring in locations designated by Landlord in order to connect the Nitrogen Tank to Tenant's electrical system serving the Prime Premises.

1.8 Nitrogen Tank.

(a) Tenant, subject to Landlord's review and approval of Tenant's plans therefor (which approval shall not be unreasonably withheld, conditioned, or delayed), shall have the right to install a nitrogen tank (the "**Nitrogen Tank**") in the location set forth on Exhibit 3 (the "**Nitrogen Tank Premises**"). The Nitrogen Tank shall be installed in accordance with plans and specifications therefor that have been approved in advance, in writing, by Landlord and otherwise in accordance with the provisions of this Lease, including, without limitation, Section 11 hereof. Tenant's plans for the Nitrogen Tank shall include a secondary containment system to protect against and contain any release of Hazardous Materials. Tenant shall inspect such secondary containment system, on a periodic basis which is sufficient to avoid leaks. Tenant shall be solely responsible for obtaining all necessary governmental and regulatory approvals and for the cost of installing, operating, maintaining and removing the Nitrogen Tank. Landlord shall cooperate with Tenant with respect to obtaining such approvals. Tenant shall not install or operate the Nitrogen Tank until Tenant has obtained and submitted to Landlord copies of all required governmental permits, licenses and authorizations necessary for the installation and operation of the Nitrogen Tank. In addition to, and without limiting Tenant's obligations under the Lease, Tenant shall comply with all applicable environmental and fire prevention laws pertaining to the Nitrogen Tank. Tenant shall also be responsible for the cost of all utilities consumed in the operation of the Nitrogen Tank.

(b) Tenant shall be responsible for assuring that the installation, maintenance, operation and removal of the Nitrogen Tank shall in no way damage any portion of the Building or Property, provided that Landlord shall be responsible for all snow removal from the area immediately surrounding the Nitrogen Tank. To the maximum extent permitted by Law, the Nitrogen Tank and all appurtenances thereto shall be at the sole risk of Tenant, and Landlord shall have no liability to Tenant if the Nitrogen Tank or any appurtenant installations are damaged for any reason. Except for Landlord's negligence or willful misconduct and subject to Section 14.5, Tenant agrees to be responsible for any damage caused to the Building or Property in connection with the installation, maintenance, operation or removal of the Nitrogen Tank. Except with respect to Claims, to the extent caused by the negligence or willful misconduct of Landlord or any Landlord Parties, subject to Section 14.5, Tenant shall indemnify, save, defend (at Landlord's option and with counsel reasonably acceptable to Landlord) and hold the Landlord Parties, as hereinafter defined, harmless from and against any and all Claims (as hereinafter defined), including (i) diminution in value of the Premises or any portion thereof, (ii) damages for the loss of or restriction on use of rentable or usable space of the Premises, (iii) damages arising from any adverse impact on marketing of space in the Premises or any portion thereof, and (iv) sums paid in settlement of Claims, in each case resulting from Tenant's improper use of Tenant's Nitrogen Tank in violation of applicable Legal Requirements. This indemnification by Tenant includes costs actually incurred by Landlord: (1) in connection with any investigation required by any Governmental Authority of site conditions, (2) in connection with any

investigation reasonably required by Landlord pursuant to which it is reasonably determined that Tenant has breached its obligations with respect to Tenant's Nitrogen Tank, and (3) any clean-up, remediation, and/or removal of any Hazardous Materials and/or restoration of the Property required by any Governmental Authority, in each case, to the extent caused by Tenant's improper use of Tenant's Nitrogen. In addition to, and without limiting Tenant's obligations under the Lease, Tenant covenants and agrees that the installation and use of the Nitrogen Tank and appurtenances shall not adversely affect the insurance coverage for the Building. If for any reason, the installation or use of the Nitrogen Tank and/or the appurtenances shall result in an increase in the amount of the premiums for such coverage, then Tenant shall be liable for the full amount of any such increase.

(c) Tenant shall be responsible for the installation, operation, cleanliness, maintenance and removal of the Nitrogen Tank and the appurtenances, all of which shall remain the personal property of Tenant, and shall be removed by Tenant at its own expense at the expiration or earlier termination of the Lease. Subject to Section 14.5, Tenant shall repair any damage caused by such removal, including the patching of any holes to match, as closely as possible, the color surrounding the area where the Nitrogen Tank and appurtenances were attached. Such maintenance and operation shall be performed in a manner to avoid any unreasonable interference with any other tenants or Landlord. Tenant shall take the Nitrogen Tank Premises "as is" in the condition in which the Nitrogen Tank Premises is in as of the Commencement Date, without any obligation on the part of Landlord to prepare or construct the Nitrogen Tank Premises for Tenant's use or occupancy. Without limiting the foregoing, Landlord makes no warranties or representations to Tenant as to the suitability of the Nitrogen Tank Premises for the installation and operation of the Nitrogen Tank. Tenant shall have no right to make any changes, alterations, additions, decorations or other improvements to the Nitrogen Tank Premises without Landlord's prior written consent which shall not be unreasonably withheld, conditioned or delayed. Tenant agrees to maintain the Nitrogen Tank in good condition and repair, provided that the aesthetics of the Nitrogen Tank shall be subject to reasonable wear and tear.

(d) Tenant shall have access to the Nitrogen Tank and the Nitrogen Tank Premises, and the surrounding area for the purpose of installing, repairing, maintaining and removing said Nitrogen Tank.

(e) Landlord shall have no obligation to provide any services, including, without limitation, electric current, to the Nitrogen Tank; provided, Tenant shall, at Tenant's cost, have the right to bring such electric current to the Nitrogen Tank from the Prime Premises.

1.9 Non-HM Storage Premises. During the Term, Landlord shall lease and demise the Non-HM Storage Premises, as shown on Exhibit 1C, Sheet 3, to Tenant, and Tenant shall hire and take the Non-HM Storage Premises from Landlord. The demise of the Non-HM Storage Premises shall be upon all of the same terms and conditions applicable to the demise of the other portions of the Premises, except:

(a) The Base Rent and Additional Rent payable by Tenant with respect to the Non-HM Storage Premises is included in the Base Rent and Additional Rent payable by Tenant with respect to the other portions of the Premises.

(b) Any improvements desired by Tenant with respect to the Non-HM Storage Premises shall be included in Landlord's Work, and paid for as part of, Landlord's Work. Otherwise, the Non-HM Storage Premises shall be leased by Tenant "as-is", in the condition in which the Non-HM Storage Premises are in as of the Term Commencement Date, without any obligation on the part of Landlord to prepare or construct the Non-HM Storage Premises for Tenant

(c) Tenant shall use the Non-HM Storage Premises for the sole purpose of storing personal property and equipment used by Tenant in connection with its use of the other portions of the Premises, provided however, that in no event shall Hazardous Materials be stored in the Non-HM Storage Premises, and for no other purpose whatsoever.

(d) Landlord shall have no obligation to provide any services to the Non-HM Storage Premises.

2. RIGHTS RESERVED TO LANDLORD

2.1 Additions and Alterations. Landlord reserves the right, at any time and from time to time, to make such changes, alterations, additions, improvements, repairs or replacements in or to the Property (including the Premises but, with respect to the Premises, only for purposes of repairs, maintenance, replacements and the exercise of any other rights expressly reserved to Landlord herein) and the fixtures and equipment therein, as well as in or to the street entrances and/or the Common Areas, as it may deem necessary or desirable, provided, however, that there be no material obstruction of permanent access to, or material interference with the use and enjoyment of, the Premises by Tenant. Subject to the foregoing, Landlord expressly reserves the right to temporarily close all, or any portion, of the Common Areas for the purpose of making repairs or changes thereto.

2.2 Additions to the Property.

(a) Landlord may at any time or from time to time (i) construct additional building(s) and improvements and related site improvements (collectively, "**Future Development**") in all or any part of the Property and/or (ii) change the location or arrangement of any improvement outside the Building in or on the Property or all or any part of the Common Areas, or add or deduct any land to or from the Property; provided that there shall be no material increase in Tenant's obligations or material interference with Tenant's rights under this Lease or any material obstruction of permanent access to, or material interference with, the use and enjoyment of the Premises by Tenant in connection with the exercise of the foregoing reserved rights.

(b) In case any excavation shall be made for building or improvements or for any other purpose upon the land adjacent to or near the Premises, Tenant will afford without

charge to Landlord, or the person or persons, firms or corporations causing or making such excavation, license to enter upon the Premises for the purpose of doing such work as Landlord or such person or persons, firms or corporation shall deem to be necessary to preserve the walls or structures of the Building from injury, and to protect the Building by proper securing of foundations.

(c) Tenant acknowledges and agrees that this Lease is subject and subordinate to (i) The Hayden Science Center Condominium, which was established by Master Deed dated December 1, 2017, recorded in Book 70325, Page 108, in the Middlesex South District Registry of Deeds and filed as Document No. 195793 in the Middlesex South Registry District of the Land Court, (ii) the Condominium Floor Plans and Site Plans dated December 1, 2017, and filed with the Middlesex Registry of Deeds, Southern District, as Plan No. 1090, Pages 1 through 13, and (iii) the Declaration of Trust of The Hayden Science Center Condominium Trust dated December 1, 2017, recorded in Book 70325, Page 148, in the Middlesex South District Registry of Deeds and filed as Document No. 195794 in the Middlesex South Registry District of the Land Court (the Master Deed, Declaration of Trust, and the Plans are being referred to herein as the "**Condominium Documents**"). Tenant agrees that the Condominium Documents may be amended and that this Lease shall remain subject to and subordinate to the Condominium Documents, as so amended, so long as such amendments do not materially adversely affect Tenant's rights or obligations under this Lease.

(d) Landlord and Tenant each hereby acknowledges and agrees that in connection with any Future Development, (i) Landlord shall have the right to enter into, and subject the Property to the terms and conditions of, a commercially reasonable reciprocal easement agreement with any one or more of the neighboring property owners in order to create a commercial campus-like setting ("**REA**"); (ii) upon Landlord's request in connection with the recording of the REA, Tenant shall execute a commercially reasonable instrument in recordable form making this Lease subject and subordinate to the REA; (iii) Landlord shall have the right to subdivide the Property so long as Tenant continues to have all of the rights and obligations contained in this Lease (e.g. the appurtenant right to use all Common Areas); and (iv) Tenant shall execute such reasonable documents (which may be in recordable form) evidencing the foregoing within ten (10) business days of Landlord's request.

2.3 Name and Address of Building. Landlord reserves the right at any time and from time to time to change the name or address of the Building and/or the Property, provided Landlord gives Tenant at least three (3) months' prior written notice thereof.

2.4 Landlord's Access. Subject to the terms hereof, Tenant shall (a) upon reasonable advance notice, which may be oral (except that no notice shall be required in emergency situations), permit Landlord and any holder of a Mortgage (hereinafter defined) (each such holder, a "**Mortgagee**"), and the agents, representatives, employees and contractors of each of them, to have reasonable access to the Premises at all reasonable hours for the purposes of inspection, making repairs, replacements or improvements in or to the Premises or the Building or equipment therein (including, without limitation, sanitary, electrical, heating, air conditioning or other systems), complying with all applicable laws, ordinances, rules, regulations, statutes, by-

laws, court decisions and orders and requirements of all public authorities (collectively, "**Legal Requirements**"), or exercising any right reserved to Landlord under this Lease (including without limitation the right to take upon or through, or to keep and store within the Premises all necessary materials, tools and equipment); (b) permit Landlord and its agents and employees, at reasonable times, upon reasonable advance notice, to show the Premises during normal business hours (i.e. Monday – Friday 7 A.M. - 6 P.M., Saturday 7 A.M. – 12 P.M., excluding holidays) to any prospective Mortgagee or purchaser of the Building and/or the Property or of the interest of Landlord therein, and, during the last twelve (12) months of the Term, to prospective tenants; and (c) upon reasonable prior written notice from Landlord, permit Landlord and its agents, at Landlord's sole cost and expense, to perform environmental audits, environmental site investigations and environmental site assessments ("**Site Assessments**") in, on, under and at the Premises and the Land, it being understood that Landlord shall repair any damage arising as a result of the Site Assessments, and such Site Assessments may include both above and below the ground testing and such other tests as may be necessary or appropriate to conduct the Site Assessments. In addition, to the extent that it is necessary to enter the Premises in order to access any area that serves any portion of the Building outside the Premises, then Tenant shall, upon as much advance notice as is practical under the circumstances, and in any event at least twenty-four (24) hours' prior notice (except that no notice shall be required in emergency situations), permit contractors engaged by other occupants of the Building to pass through the Premises in order to access such areas but only if: (i) accompanied by a representative of Landlord, and (ii) provided that Landlord has given Tenant such prior notice (if any) as is required in the circumstances so that Tenant can arrange to have a representative also accompany such contractor. The parties agree and acknowledge that, despite reasonable and customary precautions (which Landlord agrees it shall exercise), any property or equipment in the Premises of a delicate, fragile or vulnerable nature may nevertheless be damaged in the course of performing Landlord's obligations. Accordingly, Tenant shall take reasonable protective precautions with unusually fragile, vulnerable or sensitive property and equipment. Notwithstanding any provision of this Lease that grants or reserves to Landlord the right to enter the Premises: (i) any such access to the Premises by Landlord or its agents shall be subject to Tenant's reasonable security and confidentiality precautions and restrictions, (ii) Tenant may designate certain areas within the Premises as secured areas containing valuable property or confidential information that may not be accessed by Landlord without at least ten (10) days' prior written notice to Tenant, except in the event of an emergency, and (iii) at Tenant's option, Tenant's representatives may accompany Landlord or Landlord's agents or contractors during any such access to the Premises, unless an event of emergency has occurred and there is insufficient time under the circumstances to defer entry until a representative of Tenant is available.

2.5 Pipes, Ducts and Conduits. Tenant shall permit Landlord to erect, use, maintain and relocate pipes, ducts and conduits in and through the Premises, provided the same do not materially reduce the floor area or materially adversely affect the appearance of the Premises.

2.6 Common Mechanical Closets. Reference is made to the mechanical closets ("**Common Mechanical Closets**") located in the Prime Premises. The Common Mechanical Closets are shown on Exhibit 1A. Tenant confirms and agrees that Landlord shall have the right

to locate equipment serving common building systems (fire/life safety, telecommunications, etc.). Landlord shall have the right, subject to Sections 2.4 and 2.7 hereof, to access the Common Mechanical Closets for the purposes of installing, maintaining, and replacing such equipment in the Common Mechanical Closets.

2.7 Minimize Interference. Except in the event of an emergency, Landlord shall use commercially reasonable efforts to minimize any interference with Tenant's business operations and use and occupancy of the Premises in connection with the exercise any of the foregoing rights under this Section 2.

3. CONDITION OF PREMISES; CONSTRUCTION**.**

3.1 Condition of Premises. Tenant acknowledges and agrees that Tenant is leasing the Premises in their "**AS IS**," "**WHERE IS**" condition and with all faults on the Execution Date, without representations or warranties, express or implied, in fact or by law, of any kind, and without recourse to Landlord, except: (i) Landlord represents to Tenant that, as of the Term Commencement Date, the Building has the systems and capacities set forth on Exhibit 5, (ii) such base building systems shall be in good working condition and repair, and (iii) Landlord shall perform Landlord's Work in accordance with the provisions of this Section 3 and Exhibit 4.

3.2 Landlord's Work.

(a) Subject to Force Majeure, as defined in Section 25.16 and any Tenant Delay, as hereinafter defined, Landlord shall perform Landlord's Work in order to prepare the Premises for Tenant's use and occupancy in accordance with Exhibit 4 attached hereto. Landlord shall use best efforts to substantially complete Landlord's Work by the Estimated Term Commencement Date (i.e., August 1, 2018). Landlord shall advise Tenant periodically of the progress of Landlord's Work, and if requested by Tenant in writing, Landlord will implement measures (e.g., overtime) reasonably determined by Landlord as appropriate to accelerate the performance of Landlord's Work, Tenant expressly agreeing that the cost of any such measures requested by Tenant shall be included in the Cost of Landlord's Work, as defined in Exhibit 4. However, except to the extent that such failure constitutes a delay in the occurrence of the Term Commencement Date (as provided in the definition of the Term Commencement Date), and, except for Tenant's remedies set forth in Section 3.2 hereof: (i) Tenant's sole remedies shall be a delay in the Term Commencement Date and, if applicable, the Expiration Date, (ii) Tenant shall have no claim or rights against Landlord, and Landlord shall have no liability or obligation to Tenant in the event of delay in Landlord's Work, and (iii) no delay in Landlord's Work shall have any effect on the parties rights or obligations under this Lease.

(b) Definitions.

(i) "**Tenant Delay**" shall mean any act or omission by Tenant and/or Tenant's agents, employees or contractors (collectively with Tenant, the "**Tenant Parties**") which causes an actual delay in the performance and timely completion of Landlord's Work. Notwithstanding the foregoing, except where a Tenant Delay arises from Tenant's failure timely to act within on or before a date or time period expressly set forth in the Lease (in which event

no Tenant Delay Notice shall be required): (x) in no event shall any act or omission be deemed to be a Tenant Delay until and unless Landlord has given Tenant written notice (the "**Tenant Delay Notice**") advising Tenant (a) that a Tenant Delay is occurring, and (b) of the basis on which Landlord has determined that a Tenant Delay is occurring, and (y) no period of time prior to the time that Tenant receives a Tenant Delay Notice shall be included in the period of time charged to Tenant pursuant to such Tenant Delay Notice.

(ii) "**Substantially Complete**" or "**Substantial Completion**," when referring to Landlord's Work shall mean that: (1) Landlord's Work is completed, other than Punchlist Items (defined below) which do not materially affect Tenant's use of, or access to, the Premises, (2) the Premises and those portions of the Common Areas of the Building which affect Tenant's occupancy are in conformance with all applicable building codes, permits, laws and regulations, including without limitation, ADA, (3) all structural elements and subsystems of the Building, including but not limited to HVAC, mechanical, electrical, lighting, plumbing, and life safety systems, will be in good working condition and repair, (4) Landlord has delivered to Tenant a certificate of substantial completion from Landlord's architect stating that Landlord's Work is substantially complete, and (5) such evidence (the "**Town Approval**") as is customarily provided by the Town of Lexington to evidence its acceptance of Landlord's Work and Tenant's right to lawfully occupy the Premises (e.g., sign-offs on the Building permit by all applicable Town of Lexington departments or a certificate of occupancy, which may be a temporary certificate of occupancy) has been provided by the Town of Lexington. No costs incurred by Landlord in satisfying the definition of Substantial Completion shall be included in Operating Costs. Notwithstanding anything to the contrary herein contained, in the event that Landlord's Work is delayed by reason of any Tenant Delay, then Landlord shall be deemed to have achieved Substantial Completion of Landlord's Work on the date that Landlord would have achieved Substantial Completion of Landlord's Work, but for such Tenant Delay.

(iii) **Punchlist**. Promptly following Substantial Completion of Landlord's Work, Landlord shall provide Tenant with a punchlist prepared by Landlord's architect (the "**Punchlist**") incorporating those items jointly identified by Landlord and Tenant during their joint inspection of Landlord's Work, of outstanding items (the "**Punchlist Items**"). Promptly after Substantial Completion of Landlord's Work, Landlord and Tenant shall jointly inspect the Premises. Subject to Landlord's Force Majeure and Tenant Delays, Landlord shall complete all Punchlist Items within thirty (30) days of the date of the Punchlist (other than seasonal items, such as landscaping, requiring a longer period), provided that Tenant reasonably cooperates in connection with the completion of such Punchlist Items.

3.3 Tenant's Remedies in the Event of Delays in Term Commencement Date.

If the Term Commencement Date does not occur on or before the Outside Termination Date, as hereinafter defined, then Tenant shall have the right to terminate the Lease, which shall be exercisable by a written thirty-(30)-day termination notice given on or after the Outside Termination Date but before the date that the Term Commencement Date occurs. If the Term Commencement Date occurs on or before the thirtieth (30th) day after Landlord receives such termination notice, Tenant's termination notice shall be deemed to be void and of no force or

effect. If the Term Commencement Date does not occur on or before such thirtieth (30th) day, this Lease shall terminate and shall be of no further force or effect, and, except for provisions of the lease which are intended to survive termination of the Lease (e.g., indemnification provisions), Landlord shall promptly refund to Tenant any Security Deposit paid by Tenant to Landlord and neither party shall have any further obligation to the other party. For the purposes hereof, the "**Outside Termination Date**" shall be defined as November 1, 2018, provided however, that the Outside Termination Date shall be extended by the lesser of: (x) ninety (90) days, or (y) the length of any delays in Landlord's Work arising from Force Majeure.

4. USE OF PREMISES

(a) **Permitted Uses**. During the Term, Tenant shall use the Premises only for the Permitted Uses and for no other purposes. Service and utility areas (whether or not a part of the Premises) shall be used only for the particular purpose for which they are designed. Tenant shall, to the extent required by applicable laws and insurance requirements, keep the Premises equipped with those safety appliances which are Tenant's responsibility, as set forth on Exhibit 4-3, the parties hereby acknowledging that Landlord's responsible for the maintenance and repair of those safety appliances which are Landlord's responsibility, as set forth on Exhibit 4-3.

(b) **Landlord's Vacancy Recapture Right**. If Tenant abandons or vacates all or a substantial portion of the Premises for a period of in excess of 180 consecutive days, other than by reason of casualty or the performance of Alterations in the Premises, Landlord shall have the right to terminate the Lease by giving written notice to Tenant, Landlord hereby agreeing that if Landlord exercises its termination right under this Section 4(b) solely based upon the abandonment and vacancy of the Premises by Tenant, and not based upon any other default by Tenant in its obligations under the Lease, then termination shall not be deemed to be based upon the default of Tenant hereunder.

4.2 Prohibited Uses.

(a) Notwithstanding any other provision of this Lease, Tenant shall not use the Premises or the Building, or any part thereof, or suffer or permit the use or occupancy of the Premises or the Building or any part thereof by any of the Tenant Parties (i) in a manner which would violate any of the covenants, agreements, terms, provisions and conditions of this Lease or otherwise applicable to or binding upon the Premises; (ii) for any unlawful purposes or in any unlawful manner; (iii) which, in the reasonable judgment of Landlord (taking into account the use of the Building as a combination laboratory, research and development and office building and the Permitted Uses) shall (a) impair the appearance or reputation of the Building; (b) impair, interfere with or otherwise diminish the quality of any of the Building services or the proper and economic heating, cleaning, ventilating, air conditioning or other servicing of the Building or Premises, or the use or occupancy of any of the Common Areas; (c) occasion discomfort, inconvenience or annoyance in any material respect (and Tenant shall not install or use any electrical or other equipment of any kind (including, without limitation, Tenant's Rooftop Equipment) which, in the reasonable judgment of Landlord, will cause any such impairment, interference, discomfort, inconvenience, annoyance or injury), or cause any injury or damage to any occupants of the Premises or other tenants or occupants of the Building or their property; or

(d) cause harmful air emissions, laboratory odors or noises or any reasonably objectionable odors, noises or emissions to emanate from the Premises, Tenant hereby agreeing that if another tenant or occupant of the Building or the Campus notifies Landlord that it objects to an air emission, odor or noise emanating from the Premises, then such air emission, odor, noise shall be deemed to be objectionable, if reasonable given the circumstances (Tenant expressly agreeing that if Landlord's objection is based upon the complaint of another tenant or occupant of the Premises or the Complex, then Landlord's objection shall be deemed to be reasonable); (iv) in a manner which is inconsistent with the operation and/or maintenance of the Building as a first-class combination office, research, development and laboratory facility; (v) for any fermentation processes whatsoever; or (vi) in a manner which shall increase such insurance rates on the Building or on property located therein (and Landlord shall provide Tenant with evidence documenting that Tenant's use is the cause of such increase in the insurance rates) over that applicable when Tenant first took occupancy of the Premises hereunder, provided that Tenant's use of the Premises for the Permitted Uses, as opposed to the manner of use of the Premises by Tenant, shall never be deemed a violation of this Section 4.2(a).

With respect to the use and occupancy of the Premises and the Common Areas, Tenant will not: (i) place or maintain any signage (except as set forth in Section 12.2 below), trash, refuse or other articles in any vestibule or entry of the Premises, on the footwalks or corridors adjacent thereto or elsewhere on the exterior of the Premises, nor obstruct any driveway, corridor, footwalk, parking area, mall or any other Common Areas; (ii) permit undue accumulations of or burn garbage, trash, rubbish or other refuse within or without the Premises; (iii) permit the parking of vehicles so as to interfere with (x) the ability of others, entitled thereto, to park in the common parking areas, or (y) the use of any driveway, corridor, footwalk, parking area, or other Common Areas; (iv) receive or ship articles of any kind outside of those areas reasonably designated by Landlord; (v) conduct or permit to be conducted any auction, going out of business sale, bankruptcy sale (unless directed by court order), or other similar type sale in or connected with the Premises; (vi) use the name of Landlord, or any of Landlord's affiliates in any publicity, promotion, trailer, press release, advertising, printed, or display materials without Landlord's prior written consent; or (vii) except in connection with Alterations (hereinafter defined) approved by Landlord in accordance with Section 11 or cosmetic alterations including, without limitation, artwork or whiteboards, which shall not require Landlord's approval, cause or permit any hole to be drilled or made in any part of the Building.

4.3 Transportation of Animals. No animals, animal waste, food or supplies relating to the animals maintained from time to time in the animal storage areas of the Premises shall be transported within the Building except as provided in this Section 4.3. All deliveries of animals or animal food or supplies to Tenant at the Building shall be made prior to 11:00 a.m. No transportation of animals, animal waste, food or supplies within the Building shall occur between the hours of 11:00 a.m. and 1:00 p.m. At all times that animals are transported within the Common Areas, they shall be transported in an appropriate cage or other container. At no time shall any animals, animal waste, food or supplies relating to the animals be brought into, transported through, or delivered to the lobby of the Building or be transported within the Building in elevators other than the freight elevator.

4.4 MWRA Permit. Tenant shall establish and maintain with respect to its use of wastewater facilities exclusively serving the Leased Premises, an MWRA waste water discharge program administered by a qualified individual (which individual may be (i) a third party contractor/consultant approved by Landlord, which approval shall not be unreasonably withheld, conditioned, or delayed, or (ii) an employee of Tenant or Tenant's affiliate) in accordance with the requirements of the Massachusetts Water Resources Authority ("**MWRA**") and any other applicable governmental authority. Tenant shall be solely responsible for all costs incurred in connection with such MWRA waste water program, and Tenant shall provide Landlord with such documentation as Landlord may reasonably require evidencing Tenant's compliance with the requirements of (a) the MWRA and any other applicable governmental authority with respect to such chemical safety program and (b) this Section. Tenant shall obtain and maintain during the Term (i) any permit required by the MWRA ("**MWRA Permit**") and (ii) a wastewater treatment operator license from the Commonwealth of Massachusetts with respect to Tenant's use of Tenant's Acid Neutralization Tank. Tenant shall not introduce anything into Tenant's Acid Neutralization Tank: (x) in violation of the terms of the MWRA Permit, (y) in violation of Legal Requirements or (z) that would interfere with the proper functioning of any such Acid Neutralization Tank.

4.5 Parking and Traffic Demand Management Plan. The Property is subject to a Parking and Traffic Demand Management Plan with the Town of Lexington (the "**Initial PTDM**"). Tenant agrees, at its sole expense, to comply with the requirements of the Initial PTDM, only insofar as they apply to the Premises and/or Tenant's use and occupancy thereof. In the event that the Initial PTDM is ever modified, supplemented, amended or replaced ("**PTDM Modifications**"), Tenant agrees, at its sole expense, to comply with the requirements of the PTDM Modifications, only insofar as they apply to the Premises and/or Tenant's use and occupancy thereof.

4.6 Vivarium. Tenant shall be responsible, at its sole expense, for the operations of its vivarium in accordance with all Legal Requirements and with best industry practices. Without limiting the general application of the foregoing, Tenant shall separately dispose of all waste products from the operation of Tenant's vivarium, including, without limitation, dead animals, strictly in accordance with Legal Requirements. Landlord shall have the right, from time to time by written notice to Tenant, to promulgate Rules and Regulations with respect to the operation of Tenant's vivarium so as to minimize any adverse effects that such operation may have on other occupants of the Building, including without limitation, regulations as to noise mitigation.

5. RENT; ADDITIONAL RENT

5.1 Base Rent. Commencing as of the Base Rent Commencement Date and continuing thereafter throughout the remainder of the Term, Tenant shall pay Base Rent to Landlord in equal monthly installments, in advance and without demand on the first day of each month for and with respect to such month. Commencing as of the Additional Rent Commencement Date and continuing thereafter throughout the remainder of the Term, Tenant shall pay Tenant's Share of Operating Costs, Tenant's Share of Taxes, and utility costs

(collectively "**Additional Rent**") to Landlord in accordance with this Section 5. Base Rent shall be pro-rated for any partial months. Tenant shall be responsible to pay any other (i.e., other than Base Rent and Additional Rent) charges due under the Lease. Rent shall be payable to Landlord or, if Landlord shall so direct in writing, to Landlord's agent or nominee, in lawful money of the United States which shall be legal tender for payment of all debts and dues, public and private, at the time of payment.

5.2 Operating Costs.

(a) "**Operating Costs**" shall mean all costs incurred and expenditures made by Landlord in the operation, management, repair, replacement, maintenance and insurance (including, without limitation, environmental liability insurance and property insurance on Landlord-supplied leasehold improvements for tenants, but not property insurance on tenants' equipment) of the Property or allocated to the Property, including without limitation all costs incurred by Landlord (compensation, fringe benefits, worker's compensation insurance premiums, and payroll taxes, etc.) with respect to all persons directly engage in managing the Building up to and including the Property Manager, however denominated, any costs for utilities supplied to exterior areas and the Common Areas, and any costs for repair and replacements, cleaning and maintenance of exterior areas and the Common Areas, related equipment, facilities and appurtenances and HVAC equipment, security services, a management fee in the amount of four percent (4%) of gross Building revenues (increased, if applicable, in accordance with Section 5.2(f)), the costs, including, without limitation, a commercially reasonable rental factor, of Landlord's management office for the Property, which management office may be located outside the Property and which may serve other properties in addition to the Property (in which event such costs shall be equitably allocated among the properties served by such office), the cost of operating any amenities in the Property available to all tenants of the Property and any subsidy provided by Landlord for or with respect to any such amenity, and all costs of applying and reporting for the Building or any part thereof to seek or maintain certification under the U.S. EPA's Energy Star® rating system, the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) rating system or a similar system or standard. For costs and expenditures made by Landlord in connection with the operation, management, repair, replacement, maintenance and insurance of the Building as a whole, Landlord shall make a reasonable allocation thereof between the retail and non-retail portions of the Building, if applicable. Prior to the creation of the Condominium in accordance with Section 2.2, Landlord shall allocate Operating Costs which are incurred with respect to the Common Areas of the Campus on a fair and equitable basis. Landlord shall not collect any item of cost more than once. Since the Garage is located on the Land is for the exclusive benefit of the tenants of the Building, all Operating Costs incurred by Landlord with respect to the Garage shall be allocated to the Property. After the creation of the Condominium, such allocation shall be made in accordance with the Condominium Documents establishing the Condominium. Operating Costs shall not include Excluded Costs (hereinafter defined).

(b) "**Excluded Costs**" shall be defined as (i) any fixed or percentage ground rent payable to any ground lessor, or any mortgage charges (including interest, principal, points and fees); (ii) brokerage commissions; (iii) salaries of executives and owners not directly

employed in the management/operation of the Property; (iv) the cost of work done by Landlord for a particular tenant; (v) the cost of items which, by generally accepted accounting principles, would be capitalized on the books of Landlord or are otherwise not properly chargeable against income, except to the extent such capital item is (A) required by any Legal Requirements (not in effect on the date of this Lease), or (B) reasonably projected to reduce Operating Costs, but only to the extent of the reasonably anticipated savings in Operating Costs from such capital item; (vi) the costs of Landlord's Work and any contributions made by Landlord to any tenant of the Property in connection with the build-out of its premises; (vii) franchise or income taxes imposed on Landlord; (viii) costs paid directly by individual tenants to suppliers, including tenant electricity, telephone and other utility costs; (ix) increases in premiums for insurance when such increase is caused by the use of the Building by Landlord or any other tenant of the Building; (x) depreciation of the Building; (xi) costs relating to maintaining Landlord's existence as a corporation, partnership or other entity; (xii) advertising and other fees and costs incurred in procuring tenants; (xiii) the cost of any items for which Landlord is reimbursed by insurance, condemnation awards, refund, rebate or otherwise, and any expenses for repairs or maintenance to the extent covered by warranties, guaranties and service contracts; (xiv) costs incurred in connection with any disputes between Landlord and its employees, between Landlord and Building management, or between Landlord and other tenants or occupants; (xv) Taxes; (xvi) costs of services or other benefits that are not offered to Tenant; (xvii) costs for services, supplies or repairs paid to any entities affiliated with Landlord in excess of costs that would be payable in an "arm's length" or unrelated situation for comparable services, supplies, or repairs; (xviii) costs incurred in connection with: (1) the survey or testing of asbestos or any other Hazardous Materials at the Building or elsewhere (provided however, that the survey or testing of Hazardous Materials which is required by any Legal Requirement which first becomes effective after the Execution Date of this Lease shall not be excluded from Operating Costs pursuant to this clause (1), and (2) the remediation or removal of Excluded Hazardous Materials, as hereinafter defined); (xix) reserves for repairs, maintenance or replacements; (xx) the cost of any "tap fees" or one-time lump-sum sewer or water connection fees for the Building; (xxi) liability costs, not related to property damage, directly resulting from the negligence or willful misconduct of Landlord or Landlord's agents, employees, or contractors; or (xxii) acquisition costs for sculptures, paintings, and other art objects. "**Excluded Hazardous Materials**" shall be defined as all Hazardous Materials, other than: (A) any material or substance located in the Building or the Property on the Execution Date which, as of the Execution Date, is not considered under then existing Legal Requirements, to be a Hazardous Material, but which is subsequently determined to be a Hazardous Material by reason of a Legal Requirement which first becomes effective after the Execution Date of this Lease, and (B) any material or substance is introduced to the Building or the Property after the Execution Date which, when introduced to the Building or the Property, was not then (i.e., at the time of introduction to the Building or the Property) considered, as a matter of any Legal Requirement, to be a Hazardous Material, but which is subsequently determined to be a Hazardous Material by reason of Legal Requirements which first becomes effective after the date of introduction of such material or substance to the Building or the Property.

(c) **Payment of Operating Costs**. Commencing as of the Additional Rent Commencement Date and continuing thereafter throughout the remainder of the Term of the

Lease, Tenant shall pay to Landlord, as Additional Rent, Tenant's Share of Operating Costs. Landlord may make a good faith estimate of Tenant's Share of Operating Costs for any fiscal year or part thereof during the term, and Tenant shall pay to Landlord, on the Additional Rent Commencement Date and on the first (1st) day of each calendar month thereafter, an amount equal to Tenant's Share of Operating Costs for such fiscal year and/or part thereof divided by the number of months therein. Landlord may estimate and re-estimate in good faith Tenant's Share of Operating Costs and deliver a copy of the estimate or re-estimate to Tenant, provided that Landlord shall not re-estimate more than once in any twelve-(12)-month period. Thereafter, the monthly installments of Tenant's Share of Operating Costs shall be appropriately adjusted in accordance with the estimations so that, by the end of the fiscal year in question, Tenant shall have paid all of Tenant's Share of Operating Costs as estimated by Landlord. Any amounts paid based on such an estimate shall be subject to adjustment as herein provided when actual Operating Costs are available for each fiscal year. As of the Execution Date, the Property's fiscal year is January 1 – December 31.

(d) **Annual Reconciliation**. Landlord shall, within one hundred twenty (120) days after the end of each fiscal year, deliver to Tenant a reasonably detailed statement of the actual amount of Operating Costs for such fiscal year ("**Year End Statement**"). Failure of Landlord to provide the Year End Statement within the time prescribed shall not relieve Tenant from its obligations hereunder. If the total of such monthly remittances on account of any fiscal year is greater than Tenant's Share of Operating Costs actually incurred for such fiscal year, then, provided no Event of Default has occurred nor any event which, with the passage of time and/or the giving of notice would constitute an Event of Default, Tenant may credit the difference against the next installment of Additional Rent on account of Operating Costs due hereunder, except that if such difference is determined after the end of the Term, Landlord shall refund such difference to Tenant within thirty (30) days after such determination to the extent that such difference exceeds any amounts then due from Tenant to Landlord. If the total of such remittances is less than Tenant's Share of Operating Costs actually incurred for such fiscal year, Tenant shall pay the difference to Landlord, as Additional Rent hereunder, within ten (10) days of Tenant's receipt of an invoice therefor. Landlord's estimate of Operating Costs for the next fiscal year shall be based upon the Operating Costs actually incurred for the prior fiscal year as reflected in the Year-End Statement plus a reasonable adjustment based upon estimated increases in Operating Costs. The provisions of this Section 5.2(d) shall survive the expiration or earlier termination of this Lease.

(e) **Part Years**. If the Additional Rent Commencement Date or the Expiration Date occurs in the middle of a calendar year, Tenant shall be liable for only that portion of the Operating Costs with respect to such calendar year within the Term.

(f) **Gross-Up**. If, during any fiscal year, less than 95% of the Building is occupied by tenants or if Landlord was not supplying all tenants with the services being supplied to Tenant hereunder, actual Operating Costs incurred shall be reasonably extrapolated by Landlord on an item-by-item basis to the reasonable Operating Costs that would have been incurred if the Building was 95% occupied and such services were being supplied to all tenants, and such extrapolated Operating Costs shall, for all purposes hereof, be deemed to be the

Operating Costs for such fiscal year. This "**gross up**" treatment shall be applied only with respect to variable Operating Costs arising from services provided to Common Areas or to space in the Building being occupied by tenants (which services are not provided to vacant space or may be provided only to some tenants) in order to allocate equitably such variable Operating Costs to the tenants receiving the benefits thereof.

5.3 Taxes.

(a) "**Taxes**" shall mean the real estate taxes and other taxes, levies and assessments imposed upon the Building and the Land, and upon any personal property of Landlord used in the operation thereof, or on Landlord's interest therein or such personal property; charges, fees and assessments for transit, housing, police, fire or other services or purported benefits to the Building and the Land (including without limitation any community preservation assessments); service or user payments in lieu of taxes; and any and all other taxes, levies, betterments, assessments and charges arising from the ownership, leasing, operation, use or occupancy of the Building and the Land or based upon rentals derived therefrom, which are or shall be imposed by federal, state, county, municipal or other governmental authorities. Taxes shall not include (i) any inheritance, estate, succession, gift, transfer, franchise, rental, income or profit tax, capital stock tax, capital levy or excise, or any income taxes arising out of or related to the ownership and operation of the Building and the Land, provided, however, that any of the same and any other tax, excise, fee, levy, charge or assessment, however described, that may in the future be levied or assessed as a substitute for or an addition to, in whole or in part, any tax, levy or assessment which would otherwise constitute Taxes, whether or not now customary or in the contemplation of the parties on the Execution Date of this Lease, shall constitute Taxes, but only to the extent calculated as if the Building and the Land were the only real estate owned by Landlord, (ii) penalties or interest for late payment of Taxes, except to the extent that such late payment is caused by Tenant's failure time to pay such Taxes and the penalties and interest imposed by the Taxing authority as the result of late payment exceeds the interest and late fees due from Tenant under the Lease as the result of such late payment of Taxes. "**Taxes**" shall also include reasonable expenses (including without limitation legal and consultant fees) of tax abatement or other proceedings contesting assessments or levies.

Landlord shall allocate Taxes which are incurred with respect to the Common Areas of the Campus on a reasonable basis. From and after substantial completion of any occupiable improvements constructed as part of a Future Development, if such improvements are not separately assessed, Landlord shall reasonably allocate Taxes between the Building and such improvements and the land area associated with the same. From and after the creation of the Condominium for the Campus, such allocation shall be effected based upon the Taxes payable by Landlord with respect to the unit in the Condominium in which the Property is located.

(b) "**Tax Period**" shall be any fiscal/tax period in respect of which Taxes are due and payable to the appropriate governmental taxing authority (i.e., as mandated by the governmental taxing authority), any portion of which period occurs during the Term of this Lease.

(c) **Payment of Taxes**. Commencing as of the Additional Rent Commencement Date and continuing thereafter throughout the remainder of the Term of the Lease, Tenant shall pay to Landlord, as Additional Rent, Tenant's Share of Taxes. Landlord may make a good faith estimate of the Taxes to be due by Tenant for any Tax Period or part thereof during the Term, and Tenant shall pay to Landlord, on the Rent Commencement Date and on the first (1st) day of each calendar month thereafter, an amount equal to Tenant's Share of Taxes for such Tax Period or part thereof divided by the number of months therein. Landlord may estimate and re-estimate in good faith Tenant's Share of Taxes and deliver a copy of the estimate or re-estimate to Tenant, provided that Landlord shall not re-estimate more than once in any twelve-(12)-month period. Thereafter, the monthly installments of Tenant's Share of Taxes shall be appropriately adjusted in accordance with the estimations so that, by the end of the Tax Period in question, Tenant shall have paid all of Tenant's Share of Taxes as estimated by Landlord. Any amounts paid based on such an estimate shall be subject to adjustment as herein provided when actual Taxes are available for each Tax Period. If the total of such monthly remittances is greater than Tenant's Share of Taxes actually due for such Tax Period, then, provided no Event of Default has occurred nor any event which, with the passage of time and/or the giving of notice would constitute an Event of Default, Tenant may credit the difference against the next installment of Additional Rent on account of Taxes due hereunder, except that if such difference is determined after the end of the Term, Landlord shall refund such difference to Tenant within thirty (30) days after such determination to the extent that such difference exceeds any amounts then due from Tenant to Landlord. If the total of such remittances is less than Tenant's Share of Taxes actually due for such Tax Period, Tenant shall pay the difference to Landlord, as Additional Rent hereunder, within ten (10) days of Tenant's receipt of an invoice therefor. Landlord's estimate for the next Tax Period shall be based upon actual Taxes for the prior Tax Period plus a reasonable adjustment based upon estimated increases in Taxes. The provisions of this Section 5.3(c) shall survive the expiration or earlier termination of this Lease.

(d) **Effect of Abatements**. Appropriate credit against Taxes shall be given for any refund obtained by reason of a reduction in any Taxes by the assessors or the administrative, judicial or other governmental agency responsible therefor after deduction of Landlord's expenditures for reasonable legal fees and for other reasonable expenses incurred in obtaining the Tax refund.

(e) **Part Years**. If the Additional Rent Commencement Date or the Expiration Date occurs in the middle of a Tax Period, Tenant shall be liable for only that portion of the Taxes, as the case may be, with respect to such Tax Period within the Term.

5.4 Late Payments.

(a) Any payment of Rent due hereunder not paid when due shall bear interest for each month or fraction thereof from the due date until paid in full at the annual rate of ten percent (10%) per annum, or at any applicable lesser maximum legally permissible rate for debts of this nature (the "**Default Rate**").

(b) Additionally, if Tenant fails to make any payment within five (5) business days after the due date therefor, Landlord may charge Tenant a fee, which shall constitute liquidated damages, equal to three (3%) of any such late payment.

(c) For each Tenant payment check to Landlord that is returned by a bank for any reason, Tenant shall pay a returned check charge equal to the amount as shall be customarily charged by Landlord's bank at the time.

(d) Money paid by Tenant to Landlord shall be applied to Tenant's account in the following order: first, to any unpaid Additional Rent, including without limitation late charges, returned check charges, legal fees and/or court costs chargeable to Tenant hereunder; and then to unpaid Base Rent.

(e) The parties agree that the late charge referenced in Section 5.4(b) represents a fair and reasonable estimate of the costs that Landlord will incur by reason of any late payment by Tenant, and the payment of late charges and interest are distinct and separate in that the payment of interest is to compensate Landlord for the use of Landlord's money by Tenant, while the payment of late charges is to compensate Landlord for Landlord's processing, administrative and other costs incurred by Landlord as a result of Tenant's delinquent payments. Acceptance of a late charge or interest shall not constitute a waiver of Tenant's default with respect to the overdue amount or prevent Landlord from exercising any of the other rights and remedies available to Landlord under this Lease or at law or in equity now or hereafter in effect.

5.5 No Offset; Independent Covenants; Waiver. Rent shall be paid without notice or demand, and without setoff, counterclaim, defense, abatement, suspension, deferment, reduction or deduction, except as expressly provided herein. **TENANT WAIVES ALL RIGHTS (I) TO ANY ABATEMENT, SUSPENSION, DEFERMENT, REDUCTION OR DEDUCTION OF OR FROM RENT, AND (II) TO QUIT, TERMINATE OR SURRENDER THIS LEASE OR THE PREMISES OR ANY PART THEREOF, EXCEPT AS EXPRESSLY PROVIDED HEREIN. TENANT HEREBY ACKNOWLEDGES AND AGREES THAT THE OBLIGATIONS OF TENANT HEREUNDER SHALL BE SEPARATE AND INDEPENDENT COVENANTS AND AGREEMENTS, THAT RENT SHALL CONTINUE TO BE PAYABLE IN ALL EVENTS AND THAT THE OBLIGATIONS OF TENANT HEREUNDER SHALL CONTINUE UNAFFECTED, UNLESS THE REQUIREMENT TO PAY OR PERFORM THE SAME SHALL HAVE BEEN TERMINATED PURSUANT TO AN EXPRESS PROVISION OF THIS LEASE. LANDLORD AND TENANT EACH ACKNOWLEDGES AND AGREES THAT THE INDEPENDENT NATURE OF THE OBLIGATIONS OF TENANT HEREUNDER REPRESENTS FAIR, REASONABLE, AND ACCEPTED COMMERCIAL PRACTICE WITH RESPECT TO THE TYPE OF PROPERTY SUBJECT TO THIS LEASE, AND THAT THIS AGREEMENT IS THE PRODUCT OF FREE AND INFORMED NEGOTIATION DURING WHICH BOTH LANDLORD AND TENANT WERE REPRESENTED BY COUNSEL SKILLED IN NEGOTIATING AND DRAFTING COMMERCIAL LEASES IN MASSACHUSETTS, AND THAT THE ACKNOWLEDGEMENTS AND AGREEMENTS CONTAINED HEREIN ARE MADE**

WITH FULL KNOWLEDGE OF THE HOLDING IN WESSON V. LEONE ENTERPRISES, INC., 437 MASS. 708 (2002). SUCH ACKNOWLEDGEMENTS, AGREEMENTS AND WAIVERS BY TENANT ARE A MATERIAL INDUCEMENT TO LANDLORD ENTERING INTO THIS LEASE.

5.6 Audit Right. Provided there is no Event of Default nor any event which, with the passage of time and/or the giving of notice would constitute an Event of Default, Tenant may, upon at least thirty (30) days' prior written notice, inspect or audit Landlord's records relating to Operating Costs for any periods of time within the previous calendar year before the audit or inspection. However, no audit or inspection shall extend to periods of time before the calendar year in which the Additional Rent Commencement Date occurs. If Tenant fails to object to the calculation of Tenant's Share of Operating Costs on the Year-End Statement within sixty (60) days after such statement has been delivered to Tenant and/or fails to complete any such audit or inspection within ninety (90) days after Tenant's objection to the Year End Statement, then Tenant shall be deemed to have waived its right to object to the calculation of Tenant's Share of Operating Costs for the year in question and the calculation thereof as set forth on such statement shall be final. Tenant's audit or inspection shall be conducted only at Landlord's offices or the offices of Landlord's property manager during business hours reasonably designated by Landlord. Tenant shall pay the cost of such audit or inspection. Tenant may not conduct an inspection or have an audit performed more than once during any fiscal year. If such inspection or audit reveals that an error was made in the calculation of Tenant's Share of Operating Costs previously charged to Tenant, then, provided there is no Event of Default nor an event which, with the passage of time and/or the giving of notice would constitute an Event of Default, Tenant may credit the difference against the next installment of additional rent on account of Operating Costs due hereunder, except that if such difference is determined after the end of the Term, Landlord shall refund such difference to Tenant within thirty (30) days after such determination to the extent that such difference exceeds any amounts then due from Tenant to Landlord. If such inspection or audit reveals an underpayment by Tenant, then Tenant shall pay to Landlord, as additional rent hereunder, any underpayment of any such costs, as the case may be, within thirty (30) days after receipt of an invoice therefor. If, after such inspection or audit is made, it is finally determined or agreed that there was an error made in the calculation of Tenant's Share of Operating Costs previously charged to Tenant so that the amount billed to Tenant was in error in excess of five percent (5%) of the actual costs, then Landlord shall pay to Tenant the reasonable cost of such an audit. Tenant shall maintain the results of any such audit or inspection confidential and shall not be permitted to use any third party to perform such audit or inspection, other than an independent firm of certified public accountants (A) reasonably acceptable to Landlord, (B) which is not compensated on a contingency fee basis or in any other manner which is dependent upon the results of such audit or inspection, and (C) which executes a commercially reasonable confidentiality agreement whereby it shall agree to maintain the results of such audit or inspection confidential. The provisions of this Section 5.6 shall survive the expiration or earlier termination of this Lease.

5.7 Survival. Any obligations under this Section 5 which shall not have been paid at the expiration or earlier termination of the Term shall survive such expiration or earlier termination and shall be paid when and as the amount of same shall be determined and be due.

6. INTENTIONALLY OMITTED**.**

7. LETTER OF CREDIT

7.1 Amount. Contemporaneously with the execution of this Lease, Tenant shall deliver to Landlord either (i) cash in the amount specified in the Lease Summary Sheet (the "**Cash Security Deposit**"), which shall be held by Landlord in accordance with Section 7.4 below, or (ii) an irrevocable letter of credit (the "**Letter of Credit**") that shall (a) be in the initial amount of One Million One Hundred Fifty-Six Thousand Seven Hundred Eight and 35/100 ($1,156,708.35) Dollars; (b) be issued on the form attached hereto as Exhibit 6; (c) name Landlord as its beneficiary; (d) be drawn on an FDIC insured financial institution reasonably satisfactory to Landlord that both (x) has an office in the greater Boston metropolitan area that will accept presentation of, and pay against, the Letter of Credit and (y) satisfies both the Minimum Rating Agency Threshold and the Minimum Capital Threshold (as those terms are defined below). The "**Minimum Rating Agency Threshold**" shall mean that the issuing bank has outstanding unsecured, uninsured and unguaranteed senior long-term indebtedness that is then rated (without regard to qualification of such rating by symbols such as "+" or "-" or numerical notation) "**Baa**" or better by Moody's Investors Service, Inc. and/or "BBB" or better by Standard & Poor's Rating Services, or a comparable rating by a comparable national rating agency designated by Landlord in its discretion. The "**Minimum Capital Threshold**" shall mean that the issuing bank has combined capital, surplus and undivided profits of not less than $10,000,000,000. The Letter of Credit (and any renewals or replacements thereof) shall be for a term of not less than one (1) year. If the issuer of the Letter of Credit gives notice of its election not to renew such Letter of Credit for any additional period, Tenant shall be required to deliver a substitute Letter of Credit satisfying the conditions hereof at least thirty (30) days prior to the expiration of the term of such Letter of Credit. If the issuer of the Letter of Credit fails to satisfy either or both of the Minimum Rating Agency Threshold or the Minimum Capital Threshold, Tenant shall be required to deliver a substitute letter of credit from another issuer reasonably satisfactory to the Landlord and that satisfies both the Minimum Rating Agency Threshold and the Minimum Capital Threshold not later than ten (10) business days after Landlord notifies Tenant of such failure. Tenant agrees that it shall from time to time, as necessary, whether as a result of a draw on the Letter of Credit by Landlord pursuant to the terms hereof or as a result of the expiration of the Letter of Credit then in effect, renew or replace the original and any subsequent Letter of Credit so that a Letter of Credit, in the amount required hereunder, is in effect until a date which is at least thirty (30) days after the Expiration Date. If Tenant fails to furnish such renewal or replacement at least thirty (30) days prior to the stated expiration date of the Letter of Credit then held by Landlord, Landlord may draw upon such Letter of Credit and hold the proceeds thereof (and such proceeds need not be segregated) as a Security Deposit pursuant to the terms of this Article 7. Any renewal or replacement of the original or any subsequent Letter of Credit shall meet the requirements for the original Letter of Credit as set forth above, except that such replacement or renewal shall be issued by a national bank reasonably satisfactory to Landlord at the time of the issuance thereof.

7.2 Application of Proceeds of Letter of Credit. Upon an Event of Default, or if any proceeding shall be instituted by or against Tenant pursuant to any of the provisions of any

Act of Congress or State law relating to bankruptcy, reorganizations, arrangements, compositions or other relief from creditors (and, in the case of any proceeding instituted against it, if Tenant shall fail to have such proceedings dismissed within thirty (30) days) or if Tenant is adjudged bankrupt or insolvent as a result of any such proceeding, Landlord at its sole option may draw down all or a part of the Letter of Credit. The balance of any Letter of Credit cash proceeds shall be held in accordance with Section 7.4 below. Should the entire Letter of Credit, or any portion thereof, be drawn down by Landlord, Tenant shall, upon the written demand of Landlord, deliver a replacement Letter of Credit in the amount drawn, and Tenant's failure to do so within ten (10) days after receipt of such written demand shall constitute an additional Event of Default hereunder. The application of all or any part of the cash proceeds of the Letter of Credit to any obligation or default of Tenant under this Lease shall not deprive Landlord of any other rights or remedies Landlord may have nor shall such application by Landlord constitute a waiver by Landlord.

7.3 Transfer of Letter of Credit. In the event that Landlord transfers its interest in the Premises, Tenant shall upon notice from and at no cost to Landlord, deliver to Landlord an amendment to the Letter of Credit or a replacement Letter of Credit naming Landlord's successor as the beneficiary thereof. If Tenant fails to deliver such amendment or replacement within ten (10) days after written notice from Landlord, Landlord shall have the right to draw down the entire amount of the Letter of Credit and hold the proceeds thereof in accordance with Section 7.4 below.

7.4 Cash Proceeds of Letter of Credit. Landlord shall hold the Cash Security Deposit and/or the balance of proceeds remaining after a draw on the Letter of Credit (each hereinafter referred to as the "**Security Deposit**") as security for Tenant's performance of all its Lease obligations. After an Event of Default, Landlord may apply the Security Deposit, or any part thereof, to Landlord's damages without prejudice to any other Landlord remedy. Landlord has no obligation to pay interest on the Security Deposit and may co-mingle the Security Deposit with Landlord's funds. If Landlord conveys its interest under this Lease, the Security Deposit, or any part not applied previously, may be turned over to the grantee in which case Tenant shall look solely to the grantee for the proper application and return of the Security Deposit.

7.5 Return of Security Deposit or Letter of Credit. Provided that Tenant is not then in default under this Lease, the Security Deposit and/or Letter of Credit or the remaining proceeds therefrom, as applicable, shall (less any portion thereof which may have been utilized by Landlord to cure any default or applied to any actual damage suffered by Landlord) be returned to Tenant within thirty (30) days after the latest to occur of: (i) the end of the Term, (ii) the delivery by Tenant to Landlord of the Premises free and clear of all parties claiming under Tenant and in compliance with Section 21 of the Lease, and (iii) delivery to Landlord of an acceptable Surrender Report, as defined in Section 21 of the Lease.

7.6 Reduction of the Cash Security Deposit and/or Letter of Credit.

a. On the conditions (the "**Reduction Conditions**") that as of the Effective Reduction Date, as hereinafter defined, (x) Tenant is then in full compliance with its obligations under the Lease and not in default under the Lease and (y) there has not been an Event of Default

during the twelve-month period immediately preceding the Effective Reduction Date, as it may delayed, as hereinafter set forth ("**Prior Default Condition**"), then the amount of the Cash Security Deposit/Letter of Credit may be reduced in accordance with the below-listed schedule:

Effective Reduction Date	**New Reduced Security Deposit Amount**
Second (2nd) anniversary of Commencement Date:	$694,025.01

(2) The reduction in the Security Deposit shall be accomplished as follows: (a) for a Cash Security Deposit, Tenant shall request such reduction in a written notice to Landlord (the "**Reduction Notice**"), and if Landlord, in good faith, determines that the Reduction Conditions have been met, Landlord shall, within ten (10) business days after Landlord's receipt of such Reduction Notice, refund to Tenant a portion of the Cash Security Deposit which Landlord is then holding so that Landlord will be holding the reduced amount, as set forth above, and (b) for a Security Deposit in the form of a Letter of Credit, Tenant shall give a Reduction Notice to Landlord, and if Landlord, in good faith, determines that the Reduction Conditions have been met, Landlord shall, within five (5) business days of its receipt of such Reduction Notice, so notify Tenant, whereupon Tenant shall either deliver to Landlord either: (i) a Substitute Letter of Credit in the applicable reduced amount, in form satisfying the requirements of this Section 7, or (ii) an amendment to the existing Letter of Credit, in form and substance reasonably acceptable to Landlord, reducing the amount of the existing Letter of Credit to the applicable reduced amount. If Tenant delivers to Landlord a Substitute Letter of Credit satisfying the foregoing requirements, as aforesaid, then Landlord shall exchange the existing Letter of Credit which Landlord is then holding for such Substitute Letter of Credit within ten (10) business days after Landlord receives such Substitute Letter of Credit to Landlord. If Landlord declines to reduce the Security Deposit based upon the fact that any of the Reduction Conditions have not been satisfied, but Tenant subsequently satisfies the Reduction Conditions, then Tenant may submit a new Reduction Notice to Landlord for the reduction in the Security Deposit in accordance with the provisions of this Section 7.6. In such event, the Prior Default Condition shall be determined based the 12 month period immediately preceding the delayed Effective Reduction Date.

(3) In no event shall the Cash Security Deposit/Letter of Credit ever be less than $694,025.01. The Security Deposit, as it may be reduced in accordance with the foregoing, shall continue to be held by Landlord throughout the Term of the Lease.

8. INTENTIONALLY OMITTED**.**

9. UTILITIES, LANDLORD'S SERVICES

9.1 Electricity. Landlord shall contract with the utility provider for electric service to the Property, including the Premises. Commencing on the Term Commencement Date, Tenant shall pay all charges for electricity furnished to the Premises and any equipment exclusively serving the Premises, as Additional Rent, based on the existing submeter for the Premises. At Tenant's request, Landlord shall provide Tenant with reasonable back-up documentation

regarding the total charges and the method of allocating the charges to Tenant. Tenant shall, at Tenant's sole cost and expense, maintain and keep in good order, condition and repair the metering equipment used to measure electricity furnished to the Premises and any equipment exclusively serving the same, excluding reasonable wear and tear and damage caused by fire or other casualty.

9.2 Water. Landlord shall contract with the utility provider for water service to the Property, including the Premises. Except as otherwise provided below, the cost of providing water service to the Premises and all other portions of the Building (including, without limitation, the premises of other tenants or occupants of the Building) shall be included in Operating Costs. Notwithstanding the foregoing, if Landlord in good faith determines that Tenant is using water in excess of its proportionate share (by floor area) of the total water usage in the Building, Landlord may elect, at Landlord's expense, to furnish and install in a location in or near the Premises metering equipment to measure water furnished to the Premises and any equipment exclusively serving the same, provided that if it is ultimately determined that Tenant is consuming water in excess of its proportionate share (by floor area), Tenant shall pay the cost of installing such separate metering equipment. In such event, Tenant shall, within thirty (30) days after Landlord's written demand therefor from time to time, pay to Landlord, as Additional Rent, the full amount of any water service charges attributable to such meter.

9.3 Gas. Landlord shall contract with the utility provider for gas service to the Property, including the Premises. The cost of gas used to serve base building plumbing, mechanical and electrical systems shall be included in the costs reimbursed by Tenant pursuant to Section 9.6 below. If Tenant requires gas service for the operation of Tenant's laboratory equipment in the Premises, Tenant shall pay all charges for gas furnished to the Premises and/or any equipment exclusively serving the Premises as Additional Rent, based, at Landlord's election, (i) on Landlord's reasonable estimate of such gas usage or (ii) on metering or submetering equipment installed by Landlord at Tenant's expense.

9.4 Other Utilities. Subject to Rules and Regulations, Tenant shall obtain and pay, as and when due, for all other utilities and services consumed in and/or furnished to the Premises, together with all taxes, penalties, surcharges and maintenance charges pertaining thereto.

9.5 Interruption or Curtailment of Utilities. When necessary by reason of accident or emergency, or for repairs, alterations, replacements or improvements which in the reasonable judgment of Landlord are desirable or necessary to be made, Landlord reserves the right, upon as much prior notice to Tenant as is practicable under the circumstances and no less than forty-eight (48) hours' notice except in the event of an emergency, to interrupt, curtail, or stop (i) the furnishing of hot and/or cold water, and (ii) the operation of the plumbing and electric systems. Landlord shall exercise reasonable diligence to eliminate the cause of any such interruption, curtailment, stoppage or suspension, but, except as set forth in Section 10.7, there shall be no diminution or abatement of Rent or other compensation due from Landlord to Tenant hereunder, nor shall this Lease be affected or any of Tenant's obligations hereunder reduced, and Landlord shall have no responsibility or liability for any such interruption, curtailment, stoppage, or suspension of services or systems.

9.6 Landlord's Services. Subject to reimbursement pursuant to Section 5.2 above, Landlord shall provide the services described in Exhibit 7 attached hereto and made a part hereof ("**Landlord's Services**"). Except for the cost of providing and maintaining supplemental HVAC equipment (which shall be Tenant's responsibility), all costs incurred in connection with the provision of Landlord's Services shall be included in Operating Costs. Landlord shall allocate to the Premises a portion of the total amount of such costs incurred with respect to the Building based upon the cubic footage of heated, chilled, and fresh air distributed in the Premises as indicated by the energy management system serving the Building as a percentage of the aggregate cubic footage of heated, chilled, and fresh air distributed in the entire Building for the applicable period. Tenant shall pay such costs monthly, together with monthly installments of Base Rent, on an estimated basis in amounts from time to time reasonably determined by Landlord. After the close of each fiscal year, Landlord shall determine the actual amount of such costs for such year and deliver to Tenant a reasonably detailed statement thereof, together with a statement of the amounts paid by Tenant on an estimated basis toward such costs as aforesaid. If such statement indicates that the estimated amounts paid by Tenant are less than Tenant's allocable share of the actual amount of such costs for such fiscal year, then Tenant shall pay the amount of such shortfall to Landlord within thirty (30) days after delivery of such statement. If such statement indicates that Tenant's estimated payments for such year exceed the actual amount of such costs for such year, then Landlord shall credit the excess against the next due installment(s) of Additional Rent payable under this Section 9.6, except that if such difference is determined after the end of the Term, Landlord shall refund such difference to Tenant within thirty (30) days after such determination to the extent that such difference exceeds any amounts then due from Tenant to Landlord.

10. MAINTENANCE AND REPAIRS

10.1 Maintenance and Repairs by Tenant. Subject to Landlord's obligations in Section 10.2 below, Tenant shall keep neat and clean and free of insects, rodents, vermin and other pests and in the same repair, order and condition as on the Term Commencement Date (reasonable wear and tear and damage by Casualty excepted): the Premises, including without limitation the entire interior of the Premises, all electronic, phone and data cabling and related equipment (other than building service equipment) that is installed by or for the exclusive benefit of the Tenant (whether located in the Premises or other portions of the Building), all fixtures, equipment and specialty lighting therein, any supplemental HVAC and humidification equipment exclusively serving the Premises, electrical equipment wiring, doors, non-structural walls, windows and floor coverings, and all laboratory specific systems and equipment that exclusively serve the Premises, including, without limitation, equipment critical to laboratory operations. Without limiting the foregoing, Tenant agrees that it shall maintain, in the same repair, order and condition as on the Term Commencement Date (reasonable wear and tear and damage by Casualty excepted), any equipment which is the responsibility for Tenant to maintain as set forth on Exhibit 4-3.

10.2 Maintenance and Repairs by Landlord. Except as otherwise provided in Section 15, and subject to Tenant's obligations in Section 10.1 above, Landlord shall maintain the Building foundation, the roof, Building structure, the common mechanical systems serving

the Building, the structural floor slabs and columns in good repair, order and condition. In addition, Landlord shall operate and maintain the Common Areas in substantially the same manner as Class A office and laboratory facilities in the Market Area, as defined in Section 1.2(b). Without limiting the foregoing, Tenant agrees that it shall maintain, in good repair, order and condition, any equipment which is the responsibility for Tenant to maintain as set forth on Exhibit 4-3. All costs incurred by Landlord under this Section 10.2 shall be included in Operating Costs, subject to, and in accordance with, Section 5.2.

10.3 Accidents to Sanitary and Other Systems. Tenant shall give to Landlord prompt notice of any fire or accident in the Premises or in the Building and of any damage to, or defective condition in, any part or appurtenance of the Building including, without limitation, sanitary, electrical, ventilation, heating and air conditioning or other systems located in, or passing through, the Premises, of which Tenant is aware. Except as otherwise provided in Section 15, and subject to Tenant's obligations in Section 10.1 above, such damage or defective condition shall be remedied by Landlord with reasonable diligence, but, subject to Section 14.5 below, if such damage or defective condition was caused by any of the Tenant Parties, the cost to remedy the same shall be paid by Tenant.

10.4 Floor Load--Heavy Equipment. Tenant shall not place a load upon any floor of the Premises exceeding the floor load per square foot of area which such floor was designed to carry and which is allowed by Legal Requirements. Landlord reserves the right to prescribe the weight and position of all safes, heavy machinery, heavy equipment, freight, bulky matter or fixtures (collectively, "**Heavy Equipment**"), which shall be placed so as to distribute the weight. Heavy Equipment shall be placed and maintained by Tenant at Tenant's expense in settings sufficient in Landlord's reasonable judgment to absorb and prevent vibration, noise and annoyance. Tenant shall not move any Heavy Equipment into or out of the Building without giving Landlord prior written notice thereof and observing all of the Rules and Regulations with respect to the same. If such Heavy Equipment requires special handling, Tenant agrees to employ only persons holding a Master Rigger's License to do said work, and that all work in connection therewith shall comply with Legal Requirements. Any such moving shall be at the sole risk and hazard of Tenant and Tenant will defend, indemnify and save Landlord and Landlord's agents (including without limitation its property manager), contractors and employees (collectively with Landlord, the "**Landlord Parties**") harmless from and against any and all claims, damages, losses, penalties, costs, expenses and fees for bodily injury, death or property damage (including without limitation reasonable legal fees) (collectively, "**Claims**") to the extent resulting from such moving. Proper placement of all Heavy Equipment in the Premises shall be Tenant's responsibility, unless Landlord directs the placement of such Heavy Equipment as provided above in this Section 10.4.

10.5 Premises Cleaning. Tenant shall be responsible, at its sole cost and expense, for janitorial and removing trash from the Premises to the common dumpster designated by Landlord and for providing biohazard disposal services for the Premises, including the laboratory areas thereof. Such services shall be performed by licensed (where required by law or governmental regulation), insured and qualified contractors approved in advance, in writing, by Landlord (which approval shall not be unreasonably withheld, delayed or conditioned) and on a

sufficient basis to ensure that the Premises are at all times kept neat and clean. Landlord shall provide a dumpster and/or compactor at the Building loading dock for Tenant's disposal of non-hazardous and non-controlled substances.

10.6 Pest Control. Tenant, at Tenant's sole cost and expense, shall cause the Premises to be exterminated on a monthly basis to Landlord's reasonable satisfaction and shall cause all portions of the Premises used for the storage, preparation, service or consumption of food or beverages to be cleaned daily in a manner reasonably satisfactory to Landlord, and to be treated against infestation by insects, rodents and other vermin and pests whenever there is evidence of any infestation. Tenant shall not permit any person to enter the Premises for the purpose of providing such extermination services, unless such persons have been approved by Landlord.

10.7 Service Interruptions.

(a) **Abatement of Rent**. In the event that: (i) there shall be an interruption, curtailment or suspension of any service or failure to perform any obligation required to be provided or performed by Landlord pursuant to Sections 9 and/or 10 (and no reasonably equivalent alternative service or supply is provided by Landlord) that shall materially interfere with Tenant's use and enjoyment of the Premises, or any portion thereof (any such event, a "**Service Interruption**"), and (ii) such Service Interruption shall continue for three (3) consecutive business days following receipt by Landlord of written notice (the "**Service Interruption Notice**") from Tenant describing such Service Interruption ("**Abatement Service Interruption Cure Period**"), and (iii) such Service Interruption shall not have been caused by an act or omission of Tenant or Tenant's agents, employees, or contractors (an event that satisfies the foregoing conditions (i)-(iii) being referred to hereinafter as a "**Material Service Interruption**") then, Tenant, subject to the next following sentence, shall be entitled to an equitable abatement of Base Rent, Operating Costs and Taxes based on the nature and duration of the Material Service Interruption and the area of the Premises affected, for any and all days following the Material Service Interruption Cure Period that both (x) the Material Service Interruption is continuing and (y) Tenant does not use such affected areas of the Premises for a bona fide business purpose. Any efforts by Tenant to respond or react to any Material Service Interruption, including, without limitation, any activities by Tenant to remove its personal property from the affected areas of the Premises, shall not constitute a use that precludes abatement pursuant to this Section 10.7(a). The Abatement Service Interruption Cure Period shall be extended by reason of any delays in Landlord's ability to cure the Service Interruption in question caused by Landlord's Force Majeure, provided however, that in no event shall the Abatement Service Interruption Cure Period with respect to any Service Interruption be longer than ten (10) consecutive business days after Landlord receives the applicable Service Interruption Notice.

(b) **Tenant's Termination Right**. In the event that: (i) a Service Interruption occurs, and (ii) such Service Interruption continues for a period of ninety (90) consecutive days after Landlord receives a Service Interruption Notice with respect to such Service Interruption ("**Termination Service Interruption Cure Period**"), and (iii) such Service Interruption shall not have been caused by an act or omission of Tenant or Tenant's agents, employees, or

contractors, and (iv) for so long as Tenant ceases to use the affected portion of the Premises during such Service Interruption, then Tenant shall have the right to terminate this Lease by giving a written termination notice to Landlord after the expiration of the Termination Service Interruption Cure Period. If such Service Interruption is cured within ten (10) days ("**Post-Termination Notice Cure Period**") after Landlord receives such termination notice, then Tenant shall have no right to terminate this Lease based upon such Service Interruption and Tenant's termination notice shall be of no force or effect. The Termination Service Interruption Cure Period and the Post-Termination Notice Cure Period shall each be extended by reason of any delays in Landlord's ability to cure the Service Interruption in question caused by Landlord's Force Majeure, provided however, that in no event shall the aggregate extension of the Termination Service Interruption Cure Period and the Post-Termination Notice Cure Period by reason of Landlord's Force Majeure exceed sixty (60) days

(c) The provisions of this Section 10.7 shall not apply in the event of a Service Interruption caused by Casualty or Taking (see Section 15 hereof).

(d) The provisions of this Section 10.7 set forth Tenant's sole rights and remedies, both in law and in equity, in the event of any Service Interruption.

11. ALTERATIONS AND IMPROVEMENTS BY TENANT

11.1 Procedures for Performing Alterations. Tenant shall not make any alterations, installations, removals, additions or improvements (collectively with Tenant's Work, "**Alterations**") in or to the Premises without Landlord's prior written approval of the contractor(s), written plans and specifications and a time schedule therefor. Landlord reserves the right to require that Tenant use Landlord's preferred vendor(s) for any Alterations that involve roof penetrations, alarm tie-ins, sprinklers, fire alarm and other life safety equipment. Tenant shall not make any amendments or additions to plans and specifications approved by Landlord without Landlord's prior written consent. Landlord's approval of non-structural Alterations shall not be unreasonably withheld, conditioned or delayed. Notwithstanding the foregoing, Landlord may withhold its consent in its sole discretion (a) to any Alteration to or affecting the fixed lab benches, fume hoods, roof and/or building systems, (b) with respect to matters of aesthetics relating to Alterations to or affecting the exterior of the Building, and (c) to any Alteration affecting the Building structure. Notwithstanding anything to the contrary herein contained, Tenant shall have the right, without obtaining Landlord's consent to make Permitted Alterations, as hereinafter defined, provided that: (i) Tenant gives Landlord at least ten (10) business days' prior written notice of any Permitted Alteration, (ii) Tenant submit to Landlord, together with such notice, plans and specifications for such Permitted Alteration if Tenant utilizes plans and specifications for such Permitted Alteration, and otherwise Tenant submits to Landlord, together with such notice, a reasonably detailed description of such Permitted Alteration; and (iii) such Permitted Alteration does not affect any of the Building systems or the ceiling of the Premises. A "**Permitted Alteration**" shall be defined as: (x) cosmetic alterations within the Premises which are not visible from the exterior of the Premises, and (y) interior, non-structural Alterations costing not more than $250,000.00 in each instances. Tenant shall provide

Landlord with reproducible record drawings (in CAD format) of all Alterations (excluding decorative or cosmetic Alterations) within sixty (60) days after completion thereof.

11.2 Landlord Approval of Alterations. Tenant shall be responsible for all elements of the design of Tenant's plans (including, without limitation, compliance with Legal Requirements, functionality of design, the structural integrity of the design, the configuration of the Premises and the placement of Tenant's furniture, appliances and equipment), and Landlord's approval of Tenant's plans shall in no event relieve Tenant of the responsibility for such design. Landlord shall have no liability or responsibility for any claim, injury or damage alleged to have been caused by the particular materials (whether building standard or non-building standard), appliances or equipment selected by Tenant in connection with any work performed by or on behalf of Tenant. Except as otherwise expressly set forth herein, all Alterations shall be done at Tenant's sole cost and expense and at such times and in such manner as Landlord may from time to time reasonably designate. In seeking Landlord's approval, Tenant shall provide Landlord, at least ten (10) business days in advance of any proposed construction, with plans, specifications, bid proposals, certified stamped engineering drawings and calculations by Tenant's engineer of record or architect of record, (including connections to the Building's structural system, modifications to the Building's envelope, non-structural penetrations in slabs or walls, and modifications or tie-ins to life safety systems), work contracts, requests for laydown areas and such other information concerning the nature and cost of the Alterations as Landlord may reasonably request. Landlord shall respond to Tenant's request for approval of Tenant's plans and specifications for any Alteration on or before the date ten (10) business days after Landlord's receipt of such plans and specifications and all other documentation required, pursuant to the provisions of the Lease, to be submitted to Tenant to Landlord in connection with such Alteration ("**Landlord Response Period**"), and if Landlord shall disapprove any aspect thereof, it shall provide a reasonably detailed explanation of the reasons for such disapproval. If Landlord shall fail to respond to Tenant's request for approval of such plans and specifications within the Landlord Response Period, and such failure shall continue for five (5) business days after Landlord's receipt of a Reminder Notice (as defined below), then Landlord's consent to such plans and specifications shall be deemed given. For purposes hereof, a "**Reminder Notice**" shall be a notice from Tenant to Landlord that states in bold faced capital letters at the top of the first page thereof the following: "**LANDLORD'S FAILURE TO RESPOND WITHIN FIVE (5) BUSINESS DAYS AFTER RECEIPT OF THIS REQUEST SHALL CONSTITUTE LANDLORD'S APPROVAL OF THE PLANS AND SPECIFICATIONS FOR TENANT'S WORK SUBMITTED TO LANDLORD FOR ITS APPROVAL ON _____, 20__.**"

11.3 Removal of Alterations by Tenant. Subject to the provisions of this Section 11.3), then Landlord may, by written notice to Tenant at least thirty (30) days prior to the Expiration Date, to require Tenant to remove any Required Removables, as hereinafter defined, and to restore the Premises to substantially the same condition as existed immediately prior to the installation of such Required Removables. Upon Tenant's written request at the time that Tenant requests Landlord's approval of any Alteration or gives Landlord written notice of any Permitted Alteration, as the case may be, Landlord shall, at the time that Landlord approves such Alteration or within five (5) business days after Landlord receives written notice from Tenant of such Permitted Alteration, as the case may be, give written notice to Tenant notifying Tenant as

to whether Landlord elects that Tenant remove any Required Removable which is included as part of such Alteration or Permitted Alteration, as the case may be. "**Required Removables**" shall be defined as: (a) any cable installed by or for the benefit of Tenant, and (b) any Alterations that, in Landlord's reasonable judgment, are of a nature that would require removal and repair costs that are materially in excess of the removal and repair costs associated with standard office/laboratory improvements. Required Removables shall include, without limitation, internal stairways, raised floors, personal restrooms and showers, vaults, rolling file systems, structural alterations and modifications, and any items set forth on Exhibit 13, but shall not include any portion of Landlord's Work which is shown on the Preliminary Space Plan, unless such item is set forth on Exhibit 13.

11.4 After-Hours. Landlord and Tenant recognize that to the extent Tenant elects to perform some or all of the Alterations during times other than normal construction hours (i.e., Monday-Friday, 7:00 a.m. to 3:00 p.m., excluding holidays), Landlord may need to make arrangements to have supervisory personnel on site. Accordingly, Landlord and Tenant agree as follows: Tenant shall give Landlord at least two (2) business days' prior written notice of any time outside of normal construction hours when Tenant intends to perform any Alterations (the "**After-Hours Work**"). Tenant shall reimburse Landlord, within ten (10) days after demand therefor, for the cost of Landlord's supervisory personnel overseeing the After-Hours Work. In addition, if construction during normal construction hours unreasonably disturbs other tenants of the Building, in Landlord's sole discretion, Landlord may require Tenant to stop the performance of Alterations during normal construction hours and to perform the same after hours, subject to the foregoing requirement to pay for the cost of Landlord's supervisory personnel. Landlord hereby agrees that the rates charged to Tenant for Landlord's supervisory personnel shall not exceed the rates charged to other tenants of the Building for the services of Landlord's supervisory personnel.

11.5 Harmonious Relations. Tenant agrees that it will not use any contractors and/or materials if their use will create any difficulty, whether in the nature of a labor dispute or otherwise, with other contractors and/or labor engaged by Tenant or Landlord or others in the construction, maintenance and/or operation of the Building, the Property or any part thereof. In the event of any such difficulty, upon Landlord's request, Tenant shall cause all contractors, mechanics or laborers causing such difficulty to leave the Property immediately.

11.6 Liens. No Alterations shall be undertaken by Tenant until (i) Tenant has made provision for written waiver of liens from all contractors for such Alteration and taken other appropriate protective measures approved and/or required by Landlord; and (ii) Tenant has procured appropriate surety payment and performance bonds which shall name Landlord as an additional obligee and has filed lien bond(s) (in jurisdictions where available) on behalf of such contractors. Any mechanic's lien filed against the Premises or the Building for work claimed to have been done for, or materials claimed to have been furnished to, Tenant shall be discharged by Tenant within ten (10) business days thereafter, at Tenant's expense by filing the bond required by law or otherwise.

11.7 General Requirements. Unless Landlord and Tenant otherwise agree in writing, Tenant shall (a) procure or cause others to procure on its behalf all necessary permits before undertaking any Alterations in the Premises (and provide copies thereof to Landlord); (b) perform all of such Alterations in a good and workmanlike manner, employing materials of good quality and in compliance with Rules and Regulations, all insurance requirements of this Lease, and Legal Requirements; and (c) defend, indemnify and hold the Landlord Parties harmless from and against any and all Claims occasioned by or growing out of such Alterations.

12. SIGNAGE

12.1 Restrictions. Tenant shall have the right to install Building standard signage identifying Tenant's business at the entrance to the Premises, which signage shall be subject to Landlord's prior written consent (which consent shall not be unreasonably withheld, conditioned or delayed). Subject to the foregoing, and subject to Section 12.2 below, Tenant shall not place or suffer to be placed or maintained on the exterior of the Premises, or any part of the interior visible from the exterior thereof, any sign, banner, advertising matter or any other thing of any kind (including, without limitation, any hand-lettered advertising), and shall not place or maintain any decoration, letter or advertising matter on the glass of any window or door of the Premises without first obtaining Landlord's written approval. No signs may be put on or in any window or elsewhere if visible from the exterior of the Building.

12.2 Monument Signage. Subject to the provisions of this Section 12.2, for so long as: (x) there is no Event of Default of Tenant and (y) the Lease is in full force and effect (the "**Monument Signage Condition**"), then Tenant shall have the right to require Landlord to list, at Tenant's cost (but subject to the Landlord's Contribution), Tenant's name ("**Tenant's Monument Signage**") on the existing exterior monument sign (the "**Monument Sign**") serving the Property in the location shown on Exhibit 6-1. The parties hereby agree that the maintenance and removal of such Tenant's Monument Signage (including, without limitation, the repair and cleaning of the existing monument façade upon removal of Tenant's Monument Signage) shall be performed at Landlord's sole cost and expense, except that Tenant shall be responsible for the cost of any change in Tenant's Monument Signage during the initial Term of the Lease.

12.3 Building Directory/Premises Signage. During the Term of the Lease:

(a) The parties acknowledge that, as of the Execution Date, there is no tenant directory in the Building lobby. If Landlord installs a tenant directory in the Building lobby: (i) Landlord shall list Tenant within the directory in the Building lobby, (ii) the initial listing shall be at Landlord's cost and expense, and (iii) any changes to such directory listing shall be at Tenant's cost and expense.

(b) Tenant shall have the right, at Tenant's cost (although such cost may be paid for out of Landlord's Contribution) to install a building standard Tenant identification sign at the entrance to the Premises.

13. ASSIGNMENT, MORTGAGING AND SUBLETTING

13.1 Landlord's Consent Required. Tenant shall not mortgage or encumber this Lease or in whole or in part whether at one time or at intervals, operation of law or otherwise. Except as expressly otherwise set forth herein, Tenant shall not, without Landlord's prior written consent, assign, sublet, license or transfer this Lease or the Premises in whole or in part whether at one time or at intervals, by sale or transfer of stock, partnership or beneficial interests, operation of law or otherwise, or permit the occupancy of all or any portion of the Premises by any person or entity other than Tenant's employees (each of the foregoing, a "**Transfer**"). Any purported Transfer made without Landlord's consent, if required hereunder, shall be void and confer no rights upon any third person, provided that if there is a Transfer, Landlord may collect rent from the transferee without waiving the prohibition against Transfers, accepting the transferee, or releasing Tenant from full performance under this Lease. In the event of any Transfer in violation of this Section 13, Landlord shall have the right to terminate this Lease upon thirty (30) days' written notice to Tenant given within sixty (60) days after receipt of written notice from Tenant to Landlord of any Transfer, or within one (1) year after Landlord first learns of the Transfer if no notice is given. No Transfer shall relieve Tenant of its primary obligation as party Tenant hereunder, nor shall it reduce or increase Landlord's obligations under this Lease.

13.2 Landlord's Recapture Right

(a) Subject to Section 13.7 below, Tenant shall, prior to offering or advertising the Premises or any portion thereof for a Transfer, give a written notice (the "**Recapture Notice**") to Landlord which: (i) states that Tenant desires to make a Transfer, (ii) identifies the affected portion of the Premises (the "**Recapture Premises**"), (iii) identifies the period of time (the "**Recapture Period**") during which Tenant proposes to sublet the Recapture Premises, or indicates that Tenant proposes to assign its interest in this Lease, and (iv) offers to Landlord to terminate this Lease with respect to the Recapture Premises (in the case of a proposed assignment of Tenant's interest in this Lease or a subletting for the remainder of the term of this Lease) or to suspend the Term for the Recapture Period (i.e. the Term with respect to the Recapture Premises shall be terminated during the Recapture Period and Tenant's rental obligations shall be proportionately reduced). Landlord shall have the Recapture Period, as hereinafter defined, within which to respond to a Recapture Notice. The "**Recapture Period**" shall be: (i) thirty (30) days from Landlord's receipt of the Recapture Notice with respect to any Recapture Premises, the size of which is less than 10,000 rentable square feet, and (ii) forty-five (45) days from Landlord's receipt of the Recapture Notice with respect to any Recapture Premises, the size of which is 10,000 rentable square feet or more.

13.3 Standard of Consent to Transfer. If Landlord does not timely give written notice to Tenant accepting a Recapture Offer or declines to accept the same, then Landlord agrees that, subject to the provisions of this Section 13, Landlord shall not unreasonably withhold, condition or delay its consent to a Transfer on the terms contained in the Recapture Notice to an entity which will use the Premises for the Permitted Uses and, in Landlord's reasonable opinion: (a) has a tangible net worth and other financial indicators sufficient to meet the Transferee's obligations under the Transfer instrument in question; (b) has a business reputation compatible with the operation of a first-class combination laboratory, research,

development and office building; and (c) the intended use of such entity does not violate any restrictive use provisions then in effect with respect to space in the Building. Notwithstanding the foregoing, Tenant agrees not to advertise any Recapture Premises for a rental rate which less than the rental rate which Landlord is then offering to lease premises in the Building or the Campus for premises which are comparable to such Recapture Premises.

13.4 Listing Confers no Rights. The listing of any name other than that of Tenant, whether on the doors of the Premises or on the Building directory, or otherwise, shall not operate to vest in any such other person, firm or corporation any right or interest in this Lease or in the Premises or be deemed to effect or evidence any consent of Landlord, it being expressly understood that any such listing is a privilege extended by Landlord revocable at will by written notice to Tenant.

13.5 Profits In Connection with Transfers. Tenant shall, within thirty (30) days of receipt thereof, pay to Landlord, as additional rent, an amount ("**Transfer Profit**") equal to fifty percent (50%) of the amount (if any) by which any rent, sum or other consideration to be paid or given in connection with any Transfer, either initially or over time, exceeds the sum of: (i) the reasonable actual out-of-pocket construction, design, legal, and brokerage expenses and other rental concessions incurred by Tenant in connection with such Transfer, plus (ii) the Rent payable by Tenant hereunder with respect to the portion of the Premises affected by such Transfer.

13.6 Prohibited Transfers. Notwithstanding any contrary provision of this Lease, Tenant shall have no right to make a Transfer unless on both (i) the date on which Tenant notifies Landlord of its intention to enter into a Transfer and (ii) the date on which such Transfer is to take effect, an Event of Default exists under this Lease. Notwithstanding anything to the contrary contained herein, Tenant agrees that in no event shall Tenant make a Transfer to (a) any government agency; (b) any tenant, subtenant or occupant of other space in the Building; or (c) any entity with whom Landlord shall have negotiated for space in the Property in the six (6) months immediately preceding such proposed Transfer, provided that Landlord has other comparable space in the Building that will satisfy such proposed tenant's requirements.

13.7 Exceptions to Requirement for Consent. Notwithstanding anything to the contrary in this Lease contained, Tenant shall have the right, upon at least ten (10) days prior written notice to Landlord, to enter into a Permitted Transfer, as hereinafter defined, without: (i) obtaining Landlord's consent, (ii) giving a Recapture Notice to Landlord, and (iii) paying Landlord any Transfer Profit. A "**Permitted Transfer**" shall be defined as: (a) a Transfer of Tenant's interest in this Lease to an Affiliated Entity (hereinafter defined) so long as such entity remains in such relationship to Tenant, and (b) an assignment of all of Tenant's interest in and to the Lease to a Successor, as hereinafter defined, provided that prior to or simultaneously with any assignment pursuant to this Section 13.7, such Affiliated Entity or Successor, as the case may be, and Tenant execute and deliver to Landlord an assignment and assumption agreement in form and substance reasonably acceptable to Landlord whereby such Affiliated Entity or Successor, as the case may be, shall agree to be independently bound by and upon all the covenants, agreements, terms, provisions and conditions set forth in the Lease on the part of Tenant to be

performed, and whereby such Affiliated Entity or Successor, as the case may be, shall expressly agree that the provisions of this Section 13 shall, notwithstanding such Transfer, continue to be binding upon it with respect to all future Transfers. For the purposes hereof, an "**Affiliated Entity**" shall be defined as any entity which is controlled by, is under common control with, or which controls Tenant. For the purposes hereof, a "**Successor**" shall be defined as any entity into or with which Tenant is merged or with which Tenant is consolidated or which acquires all or substantially all of Tenant's stock, membership interests, or assets, provided that the surviving entity shall have a net worth immediately following such Transfer, as evidenced by Financial Statements, as hereinafter defined, which is not less than the net worth of Tenant immediately preceding such Transfer. For the purposes of this Section 13.7, "**Financial Statements**" shall be mean current financial statements, in form reasonably acceptable to Landlord, certified as accurate by an independent certified public accountant which is reasonably acceptable to Landlord.

14. INSURANCE; INDEMNIFICATION; EXCULPATION

14.1 Tenant's Insurance.

(a) Tenant shall procure, pay for and keep in force throughout the Term (and for so long thereafter as Tenant remains in occupancy of the Premises) commercial general liability insurance insuring Tenant on an occurrence basis against all claims and demands for personal injury liability (including, without limitation, bodily injury, sickness, disease, and death) or damage to property which may be claimed to have occurred from and after the time any of the Tenant Parties shall first enter the Premises, of not less than One Million Dollars ($1,000,000) per occurrence and Two Million Dollars ($2,000,000) in the aggregate annually, and from time to time thereafter shall be not less than such higher amounts, if procurable, as may be reasonably required by Landlord. Tenant shall also carry umbrella liability coverage in an amount of no less than Five Million Dollars ($5,000,000). Such policy shall also include contractual liability coverage covering Tenant's liability assumed under this Lease, including without limitation Tenant's indemnification obligations. Such insurance policy(ies) shall name Landlord, Landlord's managing agent and persons claiming by, through or under them, if any, as additional insureds.

(b) Tenant shall take out and maintain throughout the Term a policy of fire, vandalism, malicious mischief, extended coverage and so-called "**all risk**" coverage insurance in an amount equal to one hundred percent (100%) of the replacement cost insuring (i) all items or components of Alterations (collectively, the "**Tenant-Insured Improvements**"), and (ii) all of Tenant's furniture, equipment, fixtures and property of every kind, nature and description related or arising out of Tenant's leasehold estate hereunder, which may be in or upon the Premises or the Building, including without limitation Tenant's Rooftop Equipment and all of Tenant's animals (collectively, "**Tenant's Property**"). The insurance required to be maintained by Tenant pursuant to this Section 14.1(b) (referred to herein as "**Tenant Property Insurance**") shall insure the interests of both Landlord and Tenant as their respective interests may appear from time to time.

(c) Tenant shall take out and maintain a policy of business interruption insurance throughout the Term sufficient to cover at least twelve (12) months of Rent due hereunder and Tenant's business losses during such 12-month period.

(d) During periods when Tenant's Work and/or any Alterations are being performed, Tenant shall maintain, or cause to be maintained, so-called all risk or special cause of loss property insurance or its equivalent and/or builders risk insurance on 100% replacement cost coverage basis, including hard and soft costs coverages. Such insurance shall protect and insure Landlord, Landlord's agents, Tenant and Tenant's contractors, as their interests may appear, against loss or damage by fire, water damage, vandalism and malicious mischief, and such other risks as are customarily covered by so-called all risk or special cause of loss property / builders risk coverage or its equivalent.

(e) Tenant shall procure and maintain at its sole expense such additional insurance as may be necessary to comply with any Legal Requirements.

(f) Tenant shall cause all contractors and subcontractors to maintain during the performance of any Alterations the insurance described in Exhibit 10 attached hereto.

(g) The insurance required pursuant to Sections 14.1(a), (b), (c), (d) and (e) (collectively, "**Tenant's Insurance Policies**") shall be effected with insurers reasonably approved by Landlord, with a rating of not less than "**A-XI**" in the current Best's Insurance Reports, and authorized to do business in the Commonwealth of Massachusetts under valid and enforceable policies. To the extent obtainable, Tenant's Insurance Policies shall each provide that it shall not be canceled or modified without at least thirty (30) days' prior written notice to each insured named therein. If Tenant is unable to obtain the agreement of its insurer to provide such prior notice of cancellation and modifications of insurance coverage to Landlord, then Tenant covenants that it will give Landlord written notice of any such cancellation or modification of insurance coverages to Landlord within five (5) business days after Tenant becomes aware of same. Tenant's Insurance Policies may include only commercially reasonable deductibles; provided that if any of the above insurances have deductibles or self-insured retentions, Tenant and/or contractor (policy named insured) shall be responsible for the deductible amount if and to the extent Tenant would otherwise be liable for the subject loss. On or before the date on which any of the Tenant Parties shall first enter the Premises and thereafter not less than fifteen (15) days prior to the expiration date of each expiring policy, Tenant shall deliver to Landlord binders of Tenant's Insurance Policies issued by the respective insurers setting forth in full the provisions thereof together with evidence reasonably satisfactory to Landlord of the payment of all premiums for such policies. In the event of any claim, and upon Landlord's request, Tenant shall deliver to Landlord complete copies of Tenant's Insurance Policies. Upon request of Landlord, Tenant shall deliver to any Mortgagee copies of the foregoing documents.

14.2 Indemnification. Except to the extent caused by the negligence or willful misconduct of any of the Landlord Parties, to the extent permitted by Legal Requirements and subject to Section 14.5, Tenant shall defend, indemnify and save the Landlord Parties harmless

from and against any and all Claims asserted by or on behalf of any person, firm, corporation or public authority arising from:

(a) Claims by a third party arising from Tenant's breach of any covenant or obligation under this Lease;

(b) Any injury to or death of any person, or loss of or damage to property, sustained or occurring in, upon, at or about the Premises;

(c) Any injury to or death of any person, or loss of or damage to property arising out of the use or occupancy of the Premises by or the negligence or willful misconduct of any of the Tenant Parties; and

(d) On account of or based upon any work or thing whatsoever done (other than by Landlord or any of the Landlord Parties) at the Premises during the Term and during the period of time, if any, prior to the Term Commencement Date that any of the Tenant Parties may have been given access to the Premises.

Except to the extent caused by the negligence or willful misconduct of any of the Tenant Parties, to the extent permitted by Legal Requirements and subject to Section 14.5, Landlord shall defend, indemnify and save the Tenant Parties harmless from and against any and all Claims for injury to persons or damage to property asserted by or on behalf of any person, firm, corporation, or public authority to the extent arising from the negligence or willful misconduct of any of the Landlord Parties during the period of time, if any, prior to the Term Commencement Date that any of the Tenant Parties may have been given access to the Premises.

14.3 Property of Tenant. Tenant covenants and agrees that, to the maximum extent permitted by Legal Requirements, all of Tenant's Property at the Premises shall be at the sole risk and hazard of Tenant, and that if the whole or any part thereof shall be damaged, destroyed, stolen or removed from any cause or reason whatsoever, no part of said damage or loss shall be charged to, or borne by, Landlord, except, subject to Section 14.5 hereof, to the extent such damage or loss is due to the negligence or willful misconduct of any of the Landlord Parties.

14.4 Limitation of Landlord's Liability for Damage or Injury. Landlord shall not be liable for any injury or damage to persons, animals or property resulting from fire, explosion, falling plaster, steam, gas, air contaminants or emissions, electricity, electrical or electronic emanations or disturbance, water, rain or snow or leaks from any part of the Building or from the pipes, appliances, equipment or plumbing works or from the roof, street or sub-surface or from any other place or caused by dampness, vandalism, malicious mischief or by any other cause of whatever nature, except, subject to Section 14.5, to the extent caused by or due to the negligence or willful misconduct of any of the Landlord Parties, and then, where notice and an opportunity to cure are appropriate (i.e., where Tenant has an opportunity to know or should have known of such condition sufficiently in advance of the occurrence of any such injury or damage resulting therefrom as would have enabled Landlord to prevent such damage or loss had Tenant notified Landlord of such condition) only after (i) notice to Landlord of the condition claimed to constitute negligence or willful misconduct, and (ii) the expiration of a reasonable time after

such notice has been received by Landlord without Landlord having commenced to take all reasonable and practicable means to cure or correct such condition; and pending such cure or correction by Landlord, Tenant shall take all reasonably prudent temporary measures and safeguards to prevent any injury, loss or damage to persons or property. Notwithstanding the foregoing, in no event shall any of the Landlord Parties be liable for any loss which is covered by insurance policies actually carried or required to be so carried by this Lease; nor shall any of the Landlord Parties be liable for any such damage caused by other tenants or persons in the Building or caused by operations in construction of any private, public, or quasi-public work; nor shall any of the Landlord Parties be liable for any latent defect in the Premises or in the Building.

14.5 Waiver of Subrogation; Mutual Release. Notwithstanding anything in this Lease to the contrary, Landlord and Tenant each hereby waives on behalf of itself and its property insurers (none of which shall ever be assigned any such claim or be entitled thereto due to subrogation or otherwise) any and all rights of recovery, claim, action, or cause of action against the other and its agents, officers, servants, partners, shareholders, or employees (collectively, the "**Related Parties**") for any loss or damage that may occur to or within the Premises or the Building or any improvements thereto, or any personal property of such party therein which is insured against under any Property Insurance (as defined in Section 14.7) policy actually being maintained by the waiving party from time to time, even if not required hereunder, or which would be insured against under the terms of any Property Insurance policy required to be carried or maintained by the waiving party hereunder, whether or not such insurance coverage is actually being maintained, including, in every instance, such loss or damage that may be caused by the negligence of the other party hereto and/or its Related Parties. Landlord and Tenant each agrees to cause appropriate clauses to be included in its Property Insurance policies necessary to implement the foregoing provisions.

14.6 Tenant's Acts--Effect on Insurance. Tenant shall not knowingly do or permit any Tenant Party to do any act or thing upon the Premises or elsewhere in the Building which will invalidate or be in conflict with any insurance policies covering the Building and the fixtures and property therein; and shall not do, or permit to be done, any act or thing upon the Premises which shall knowingly subject Landlord to any liability or responsibility for injury to any person or persons or to property by reason of any business or operation being carried on upon said Premises or for any other reason. If by reason of the failure of Tenant to comply with the provisions hereof the insurance rate applicable to any policy of insurance shall at any time thereafter be higher than it otherwise would be, Tenant shall reimburse Landlord upon demand for that part of any insurance premiums which shall have been charged because of such failure by Tenant, together with interest at the Default Rate until paid in full, within ten (10) days after receipt of an invoice therefor. In addition, Tenant shall reimburse Landlord for any increase in insurance premium arising as a result of Tenant's use and/or storage of any Hazardous Materials in the Premises.

14.7 Landlord's Insurance. Landlord shall carry at all times during the Term of this Lease: (i) commercial general liability insurance with respect to the Building, the Land and the Common Areas thereof in an amount not less than Five Million Dollars ($5,000,000) combined single limit per occurrence, (ii) with respect to the Building, excluding Tenant-Insured

Improvements and improvements made by other tenants or occupants, insurance against loss or damage caused by any peril covered under fire, extended coverage and all risk insurance with coverage against vandalism, malicious mischief and such other insurable hazards and contingencies as are from time to time normally insured against by owners of similar first class offices/research/laboratory buildings/campuses in the Market Area, as defined in Section 1.2(b), or which are required by Landlord's mortgagee, in an amount equal to one hundred percent (100%) of the full replacement cost thereof above foundation walls ("**Landlord Property Insurance**"), and (iii) rent interruption insurance covering at least twelve (12) months. Any and all such insurance: (x) may be maintained under a blanket policy affecting other properties of Landlord and/or its affiliated business organizations, and (y) may be written with commercially reasonable deductibles as determined by Landlord. The costs incurred by Landlord related to such insurance shall be included in Operating Costs. Tenant Property Insurance and Landlord Property Insurance are referred to collectively herein as "**Property Insurance**".

15. CASUALTY; TAKING

15.1 Damage. If the Premises (or access thereto) are damaged in whole or part because of fire or other casualty ("**Casualty**"), or if the Premises (or access thereto) are subject to a taking in connection with the exercise of any power of eminent domain, condemnation, or purchase under threat or in lieu thereof (any of the foregoing, a "**Taking**"), then unless this Lease is terminated in accordance with Section 15.2 below, Landlord shall restore the Building and/or the Premises to substantially the same condition as existed immediately following completion of Landlord's Work, or in the event of a partial Taking which affects the Building and the Premises, restore the remainder of the Building and the Premises not so Taken to substantially the same condition as is reasonably feasible. If, in Landlord's reasonable judgment, any element of the Tenant-Insured Improvements can more effectively be restored as an integral part of Landlord's restoration of the Building or the Premises, such restoration shall also be made by Landlord, but at Tenant's sole cost and expense. Subject to rights of Mortgagees, Tenant Delays, Legal Requirements then in existence and to delays for adjustment of insurance proceeds or Taking awards, as the case may be, and instances of Force Majeure, Landlord shall substantially complete such restoration within one (1) year after Landlord's receipt of all required permits therefor with respect to substantial reconstruction of at least 50% of the Building, or, within one hundred eighty (180) days after Landlord's receipt of all required permits therefor in the case of restoration of less than 50% of the Building. Upon substantial completion of such restoration by Landlord, Tenant shall use diligent efforts to complete restoration of the Premises (to the extent not the Landlord's responsibility under this Lease) to substantially the same condition as existed immediately prior to such Casualty or Taking, as the case may be, as soon as reasonably possible. Tenant agrees to cooperate with Landlord in such manner as Landlord may reasonably request to assist Landlord in collecting insurance proceeds due in connection with any Casualty which affects the Premises or the Building. In no event shall Landlord be required to expend more than the Net (hereinafter defined) insurance proceeds Landlord receives for damage to the Premises and/or the Building or the Net Taking award attributable to the Premises and/or the Building. "**Net**" means the insurance proceeds or Taking award actually paid to Landlord (and not paid over to a Mortgagee) less all costs and expenses, including adjusters and attorney's fees, of obtaining the same. Any costs incurred by Landlord as a result of a Casualty which are not

covered by Landlord's property insurance as the result of any commercially reasonable deductible carried by Landlord under Landlord's property insurance policy shall be included in Operating Costs for the Operating Year in which such Casualty occurs. Tenant agrees that, as of the Execution Date of the Lease, $10,000.00 is a commercially reasonable deductible under Landlord's property insurance policy. Except as Landlord may elect pursuant to this Section 15.1, under no circumstances shall Landlord be required to repair any damage to, or make any repairs to or replacements of, any Tenant-Insured Improvements.

15.2 Termination Rights.

(a) Landlord's Termination Rights. Landlord may terminate this Lease upon sixty (60) days' prior written notice to Tenant if:

(i) any material portion of the Building or any material means of access thereto is taken;

(ii) more than thirty-five percent (35%) of the Building is damaged by Casualty; or

(iii) if the estimated time to complete restoration exceeds one (1) year from the date on which Landlord receives all required permits for such restoration; or

(iv) the cost of repairing the damage caused by such Casualty is not covered by casualty insurance required to be carried by Landlord pursuant to this Lease, and such uninsured cost exceeds ten percent (10%) of the then replacement cost of the Building.

(b) Tenant's Termination Right. If Landlord is so required but fails to complete restoration of the Premises within the time frames and subject to the conditions set forth in Section 15.1 above, then Tenant may terminate this Lease upon thirty (30) days' written notice to Landlord; provided, however, that if Landlord completes such restoration within thirty (30) days after receipt of any such termination notice, such termination notice shall be null and void and this Lease shall continue in full force and effect. The remedies set forth in this Section 15.2(b) and in Section 15.2(c) below are Tenant's sole and exclusive rights and remedies based upon Landlord's failure to complete the restoration of the Premises as set forth herein. Notwithstanding anything to the contrary contained herein, Tenant shall not have the right to terminate this Lease pursuant to this Section 15 if the Casualty was caused by the gross negligence or intentional misconduct of any Tenant Party.

(c) Either Party May Terminate. In the case of any Casualty or Taking affecting the Premises and occurring during the last twelve (12) months of the Term, then (i) if such Casualty or Taking results in more than twenty-five percent (25%) of the floor area of the Premises being unsuitable for the Permitted Uses, or (ii) the damage to the Premises costs more than $250,000 to restore, then either Landlord or Tenant shall have the option to terminate this Lease upon thirty (30) days' written notice to the other. In addition, if Landlord's Mortgagee does not release sufficient insurance proceeds to cover the cost of Landlord's restoration obligations, then Landlord shall (i) notify Tenant thereof, and (ii) have the right to terminate this

Lease. If Landlord does not terminate this Lease pursuant to the previous sentence and such notice by Landlord does not include an agreement by Landlord to pay for the difference between the cost of such restoration and such released insurance proceeds, then Tenant may terminate this Lease by written notice to Landlord on or before the date that is thirty (30) days after such notice. Notwithstanding anything to the contrary contained in this Section 15, in no event may Tenant elect to terminate this Lease hereunder if the Casualty that would otherwise give rise to such right results from the gross negligence or willful misconduct of Tenant, its agents, contractors, or employees.

(d) Automatic Termination. In the case of a Taking of the entire Premises, then this Lease shall automatically terminate as of the date of possession by the Taking authority.

15.3 Rent Abatement. In the event of a Casualty affecting the Premises, there shall be an equitable adjustment of Base Rent, Operating Costs and Taxes based upon the degree to which Tenant's ability to conduct its business in the Premises is impaired by reason of such Casualty from and after the date of a Casualty, and continuing until the following portions of the repair and restoration work to be performed by Landlord, as set forth above, are substantially completed: (i) any repair and restoration work to be performed by Landlord within the Premises, and (ii) repair and restoration work with respect to the Common Areas to the extent that damage to the Common Areas caused by such Casualty materially adversely affects Tenant's use of, or access to, the Premises.

15.4 Taking for Temporary Use. If the Premises are Taken for temporary use, this Lease and Tenant's obligations, including without limitation the payment of Rent, shall continue, provided that any award for a temporary Taken shall be Tenant's property. For purposes hereof, a "**Taking for temporary use**" shall mean a Taking of six (6) months or less. If the Premises are Taken for a period of more than six (6) months, then the provisions of Sections 15.1, 15.2, 15.3 and 15.5 shall apply to such Taking.

15.5 Disposition of Awards. Except for any separate award for Tenant's movable trade fixtures, relocation expenses, and unamortized leasehold improvements paid for by Tenant (provided that the same may not reduce Landlord's award), all Taking awards to Landlord or Tenant shall be Landlord's property without Tenant's participation, and Tenant hereby assigns to Landlord Tenant's interest, if any, in such award. Tenant may pursue its own claim against the Taking authority.

16. ESTOPPEL CERTIFICATE**.**

Each party ("**Responding Party**") shall at any time and from time to time upon not less than ten (10) business days' prior written notice from the other party ("Requesting Party"), execute, acknowledge and deliver to the Requesting Party a statement in writing certifying: (i) that this Lease is unmodified and in full force and effect (or if there have been modifications, that the same is in full force and effect as modified and stating the modifications), (ii) the dates to which Rent has been paid, (iii) stating, to the Responding Party's knowledge, whether or not the Requesting Party is in default in performance of any covenant, agreement, term, provision or condition contained in this Lease and, if so, specifying each such default, and (iv) to the best of

the knowledge of the Responding Party (without the requirement to perform any investigations requiring the assistance of third parties), such other facts relating to the Lease as Requesting Party may reasonably request, it being intended that any such statement delivered pursuant hereto may be relied upon by any prospective purchaser of the Building or of any interest of Landlord therein, any Mortgagee or prospective Mortgagee thereof, any lessor or prospective lessor thereof, any lessee or prospective lessee thereof, any prospective assignee of any mortgage thereof, or any prospective transferee of Tenant's interest in the Lease or the Premises, or any portion thereof. Time is of the essence with respect to any such requested certificate, Tenant hereby acknowledging the importance of such certificates in mortgage financing arrangements, prospective sales and the like.

17. HAZARDOUS MATERIALS

17.1 Prohibition. Tenant shall not, without the prior written consent of Landlord, and except for standard office or janitorial supplies stored in proper containers, bring or permit to be brought or kept in or on the Premises or elsewhere in the Building or the Property any Hazardous Material (hereinafter defined) other than the types and quantities of Hazardous Materials ("**Tenant's Hazardous Materials**") which are listed on Tenant's Hazardous Materials List, as hereinafter defined, provided that the same shall at all times be brought upon, kept or used in accordance with all applicable Environmental Laws (hereinafter defined) and Environmental Standards, as hereinafter defined, and provided that the same shall only be used in:

a. those areas within the Prime Premises where quantities of Hazardous Materials not exceeding the maximum quantities allowed by 780 CMR are stored, dispensed, used or handled, and

b. three adjacent rooms ("**Group H Area**"), consisting of two storage rooms ("Group H Storage Area") and one laboratory ("**Group H Laboratory**") which have been constructed and equipped to satisfy the standards for Group H space (as defined in 780 CMR), so long as the maximum quantities which are stored, in the Group H Storage Area does not exceed the maximum quantities which are permitted to be stored in a Group H Storage Area under NFPA 30, Flammable and Combustible Liquids Code. Without limiting the foregoing, the total Class IB and IC flammable liquid (as defined in 527 CMR) amounts used and stored in the Group H Area shall not exceed 500 gallons.

The initial "**Tenant's Hazardous Materials List**" shall be as attached hereto as Exhibit 8. "**Environmental Standards**" shall be defined as prudent environmental practice and (with respect to medical waste and so-called "biohazard" materials) good scientific and medical practice all as customarily allowed in Tenant's industry sector for properties which are similar to the Building in location and equipment.

Tenant shall be responsible for assuring that all laboratory uses are adequately and properly vented. On or before the first day of each calendar month during the Term of the Lease, and on any earlier date during the 12-month period on which Tenant intends to add a new Hazardous

Material or materially increase the quantity or of any Hazardous Material to the list of Tenant's Hazardous Materials, Tenant shall submit to Landlord an updated list of Tenant's Hazardous Materials for Landlord's review and approval, which approval shall not be unreasonably withheld, conditioned or delayed. Landlord shall not, absent a relevant change in Environmental Laws or change in the condition of the Premises, withhold approval for the inclusion on an updated Tenant Hazardous Materials List of any Hazardous Material included on any prior approved version of the list. Landlord shall have the right, from time to time, to inspect the Premises for compliance with the terms of this Section 17.1. Notwithstanding the foregoing, with respect to any of Tenant's Hazardous Materials which Tenant does not properly handle, store or dispose of in compliance with all applicable Environmental Laws (hereinafter defined) and Environmental Standards, Tenant shall, upon written notice from Landlord, no longer have the right to bring such material into the Building or the Property until Tenant has demonstrated, to Landlord's reasonable satisfaction, that Tenant has implemented programs to thereafter handle, store or dispose of such material in compliance with Environment Laws and Environmental Standards. In order to induce Landlord to waive its otherwise applicable requirement that Tenant maintain insurance in favor of Landlord against liability arising from the presence of radioactive materials in the Premises, and without limiting the foregoing, Tenant hereby represents and warrants to Landlord that at no time during the Term will Tenant bring upon, or permit to be brought upon, the Premises any radioactive materials whatsoever.

17.2 Environmental Laws. For purposes hereof, "**Environmental Laws**" shall mean all laws, statutes, ordinances, rules and regulations of any local, state or federal governmental authority having jurisdiction concerning environmental, health and safety matters, including but not limited to any discharge by any of the Tenant Parties into the air, surface water, sewers, soil or groundwater of any Hazardous Material (hereinafter defined) whether within or outside the Premises, including, without limitation (a) the Federal Water Pollution Control Act, 33 U.S.C. Section 1251 et seq., (b) the Federal Resource Conservation and Recovery Act, 42 U.S.C. Section 6901 et seq., (c) the Comprehensive Environmental Response, Compensation and Liability Act, 42 U.S.C. Section 9601 et seq., (d) the Toxic Substances Control Act of 1976, 15 U.S.C. Section 2601 et seq., (e) Massachusetts Comprehensive Fire Safety Code 527 CMR, and (f) Chapter 21E of the General Laws of Massachusetts. Tenant, at its sole cost and expense, shall comply with (i) Environmental Laws, and (ii) any rules, requirements and safety procedures of the Massachusetts Department of Environmental Protection, the Town of Lexington and the requirements (of any insurer of the Building or the Premises with respect to Tenant's use, storage and disposal of any Hazardous Materials.

17.3 Hazardous Material Defined. As used herein, the term "**Hazardous Material**" means asbestos, oil or any hazardous, radioactive or toxic substance, material or waste or petroleum derivative which is or becomes regulated by any Environmental Law applicable to Tenant's operations in the Premises or elsewhere on the Campus, including without limitation live organisms, viruses and fungi, medical waste and any so-called "**biohazard**" materials. The term "**Hazardous Material**" includes, without limitation, oil and/or any material or substance which is (i) designated as a "hazardous substance," "**hazardous material**," "**oil**," "**hazardous waste**" or toxic substance under any Environmental Law or (ii) is classified and regulated as a

flammable, combustible, or explosive fluid, material, chemical, or substance under any Legal Requirement.

17.4 Chemical Safety Program. Tenant shall establish and maintain a chemical safety program administered by a qualified individual in accordance with the requirements of any applicable governmental authority. Tenant shall be solely responsible for all costs incurred in connection with such chemical safety program, and Tenant shall provide Landlord with such documentation as Landlord may reasonably require evidencing Tenant's compliance with the requirements of (a) any applicable governmental authority with respect to such chemical safety program and (b) this Section. Tenant shall obtain and maintain during the Term any permit required by any such applicable governmental authority.

17.5 Testing. If any Mortgagee or governmental authority requires testing to determine whether there has been any release of Hazardous Materials and such testing is required as a result of the acts or omissions of any of the Tenant Parties, then Tenant shall reimburse Landlord upon demand, as Additional Rent, for the reasonable costs thereof, together with interest at the Default Rate until paid in full. Tenant shall execute affidavits, certifications and the like, as may be reasonably requested by Landlord from time to time concerning Tenant's best knowledge and belief concerning the presence of Hazardous Materials in or on the Premises, the Building or the Property. In addition to the foregoing, if Landlord reasonably believes that any Hazardous Materials have been released on the Premises in violation of this Lease or any Legal Requirement, Landlord shall have the right to conduct reasonably scoped tests of the Premises, the Building or the Property, or any portion thereof to demonstrate that Hazardous Materials are present and to determine whether that contamination has occurred due to the acts or omissions of any of the Tenant Parties. Tenant shall pay all reasonable costs of such tests if such tests reveal that Hazardous Materials exist at the Premises in violation of this Lease or any Legal Requirement as a result of the acts or omissions of any of the Tenant Parties. Further: (i) in the event that Landlord believes in good faith that Tenant has violated this Section 17, (ii) in connection with any proposed sale or refinancing of the Property, and (iii) any recapitalization of the Landlord entity, Landlord shall have the right to cause a third party consultant retained by Landlord, at Landlord's expense (provided, however, that such costs shall be included in Operating Costs), to review, Tenant's lab operations, procedures and permits to ascertain whether Tenant has violated the provisions of this Section 17. Tenant agrees to cooperate in good faith with any such review and to provide to such consultant any information requested by such consultant and reasonably required in order for such consultant to perform such review, but nothing contained herein shall require Tenant to provide proprietary or confidential information to such consultant. Landlord's right to access to the Premises pursuant to this Section 17.5 (or any other part of this Article 17) shall be exercised in accordance with Landlord's access rights pursuant to Section 2.4.

17.6 Indemnity; Remediation.

(a) Tenant hereby covenants and agrees to indemnify, defend and hold the Landlord Parties harmless from and against any and all Claims against any of the Landlord Parties arising out of contamination of any part of the Property or other adjacent property, to the

extent such contamination arises as a result of: (i) the presence of Hazardous Material in the Premises, as a result of any acts or omissions of any of the Tenant Parties, or (ii) from a breach by Tenant of its obligations under this Section 17. This indemnification of the Landlord Parties by Tenant includes, without limitation, reasonable costs incurred in connection with any investigation of site conditions or any cleanup, remedial, removal or restoration work or any other response actions required by any federal, state or local governmental agency or political subdivision because of Hazardous Material present in the soil, soil vapor or ground water on or under or any indoor air in the Building based upon the circumstances identified in the first sentence of this Section 17.6. The indemnification and hold harmless obligations of Tenant under this Section 17.6 shall survive the expiration or any earlier termination of this Lease. Without limiting the foregoing, if the presence of any Hazardous Material in the Building or otherwise in the Property is caused by any of the acts or omissions of any Tenant Party or any invitee of Tenant and results in any contamination of any part of the Property or any adjacent property in excess of contaminant conditions that would exist but for the conduct of any Tenant Parties or invitee of Tenant, Tenant shall, at Tenant's sole cost and expense, promptly take all actions required by Environmental Law and/or to address potential material negative impacts to human health and/or the value of the Property, as are necessary to eliminate such contamination, provided that Tenant shall first obtain Landlord's written approval of such actions, which approval shall not be unreasonably withheld, conditioned or delayed so long as such actions, in Landlord's reasonable discretion, would not potentially have any adverse effect on the Property, and, in any event, Landlord shall not withhold its approval of any proposed actions which are required by applicable Environmental Laws. The provisions of this Section 17.6 shall survive the expiration or earlier termination of the Lease.

(b) Without limiting the obligations set forth in Section 17.6(a) above, if any release (as such term is defined in M.G.L. Chapter 21E) ("**Chapter 21E**") of oil or hazardous materials (as such terms are defined in Chapter 21E) occurs in, on, under, at or about the Building or the Property as a result of the acts or omissions of any of the Tenant Parties or of any invitee of Tenant, which such release requires action or is reportable to the Massachusetts Department of Environmental Protection pursuant to Chapter 21E and the Massachusetts Contingency Plan, 310 CMR 40.0000 (the "**MCP**") or pursuant to any other Environmental Law, as between Landlord and Tenant, Tenant shall have sole responsibility, at its sole cost, for reporting the condition to MassDEP or other applicable regulatory authority (if required) and for taking all response actions (as such term is used in Chapter 21E and the MCP) that are required in connection with such release pursuant to Chapter 21E and the MCP or any other applicable Environmental Law; provided that Tenant shall first obtain Landlord's written approval of such actions, which approval shall not be unreasonably withheld, conditioned or delayed so long as such actions would not reasonably be expected to have a material adverse effect on the market value or utility of the Property for the Permitted Uses, and in any event, Landlord shall not withhold its approval of any proposed actions which are required by the MCP (as determined by MassDEP, other applicable Environmental Laws, or a Licensed Site Professional (as such term is defined in the MCP) who is employed by Tenant and is reasonably acceptable to Landlord (such approved actions, "**Tenant's Remediation**").

(c) In the event that Tenant fails, through no material fault of Landlord, to complete Tenant's Remediation prior to the end of the Term, then:

(i) until the completion of Tenant's Remediation (as evidenced by the certification of Tenant's Licensed Site Professional, who shall be reasonably acceptable to Landlord) (the "**Remediation Completion Date**"), Tenant shall pay to Landlord, with respect to any portion of the Premises which reasonably cannot be occupied by a new tenant until completion of Tenant's Remediation, (A) Additional Rent on account of Operating Costs and Taxes and (B) Base Rent in an amount equal to the greater of (1) the fair market rental value of such portion of the Premises (determined in substantial accordance with the process described in Section 1.2 above), and (2) Base Rent attributable to such portion of the Premises in effect immediately prior to the end of the Term; and

(ii) Tenant shall maintain responsibility for Tenant's Remediation and Tenant shall complete Tenant's Remediation as soon as reasonably practicable in accordance with Environmental Laws. If Tenant does not diligently pursue completion of Tenant's Remediation, Landlord shall have the right, after notice and cure as provided in Section 20, to either (A) assume control for overseeing Tenant's Remediation, in which event Tenant shall pay all reasonable costs and expenses of Tenant's Remediation (it being understood and agreed that all costs and expenses of Tenant's Remediation incurred pursuant to contracts entered into by Tenant shall be deemed reasonable) within thirty (30) days of demand therefor (which demand shall be made no more often than monthly), and Landlord shall be substituted as the party identified on any governmental filings as the party responsible for the performance of such Tenant's Remediation or (B) require Tenant to maintain responsibility for Tenant's Remediation, in which event Tenant shall complete Tenant's Remediation as soon as reasonably practicable in accordance with Environmental Laws.

(d) The provisions of this Section 17.6 shall survive the expiration or earlier termination of this Lease.

17.7 Disclosures. Prior to bringing any Hazardous Material into any part of the Property, Tenant shall deliver to Landlord the following information with respect thereto: (a) a description of handling, storage, use and disposal procedures; (b) all plans or disclosures and/or emergency response plans which Tenant has prepared, including without limitation Tenant's Spill Response Plan, and all plans which Tenant is required to supply to any governmental agency or authority pursuant to any Environmental Laws; (c) copies of all Required Permits relating thereto; and (d) other information reasonably requested by Landlord.

17.8 Removal. Tenant shall be responsible, at its sole cost and expense, for Hazardous Material and other biohazard disposal services for the Premises. Such services shall be performed by contractors reasonably acceptable to Landlord and on a sufficient basis to ensure that the Premises are at all times kept neat, clean and free of Hazardous Materials and biohazards except in appropriate, specially marked containers reasonably approved by Landlord.

17.9 Landlord Obligations with respect to Hazardous Materials.

(a) Landlord Representations, Covenants and Indemnity. Landlord hereby represents and warrants to Tenant that, to the Best of Landlord's Knowledge (as that term is defined in clause (c) below), except to the extent (if any) as may be disclosed in the following described environmental assessment reports which have been made available by Landlord to Tenant (the "**Disclosed Materials**"), there exist, as of the Execution Date of this Lease, no Hazardous Materials on the Property which are in violation of applicable Environmental Laws or that require reporting, investigation, remediation or other response under Chapter 21E or other Environmental Laws:

1. Phase I Environmental Site Assessment
45, 55, 65 Hayden Avenue
Lexington, MA 02421

Prepared by Boston Environmental Corporation
Prepared for King Street Properties

July 7, 2016
Project No. BEC 16-142

1.Laboratory Decommissioning Report
For Merck Sharpe & Dohme Corp.
65 Hayden Avenue
3rd Floor
Lexington, MA

Prepared for Ms. Sharon Rose
Merck Sharp & Dohme Corp.
65 Hayden Avenue
Lexington, MA

Prepared by Triumvirate Environmental, Inc.
200 Inner Belt Road
Somerville, MA 02143

Job Number: 702841
November 16, 2016

Landlord covenants that neither Landlord nor any of the Landlord Parties shall bring any Hazardous Materials in or on to the Property or discharge any Hazardous Materials in or on to the Property which are, in either case, in violation of applicable Environmental Laws. Landlord hereby indemnifies and shall defend and hold Tenant, its officers, directors, employees, and agents harmless from any Claims arising as result of any breach by Landlord of its representations, warranties, or covenants under this Section 17.9(a).

(b) Landlord Remediation. If Hazardous Materials are discovered in, on or under the Property which are not in compliance with applicable Environmental Laws or that require reporting, investigation, remediation or other response under Chapter 21E or other Environmental Laws, and which are not the responsibility of Tenant pursuant to this Article 17, then Landlord shall remove or remediate the same, when, if, and in the manner required by applicable Environmental Laws.

(c) To the Best of Landlord's Knowledge. The phrase "to the Best of Landlord's Knowledge" under shall mean the best of the knowledge of Robert Albro, Landlord's asset manager with respect to the Property.

18. RULES AND REGULATIONS**.**

18.1 Rules and Regulations. Tenant will faithfully observe and comply with the Building Rules and Regulations attached hereto as Exhibit 9-1 ("**Current Rules and Regulations**") and future reasonable rules and regulations ("**Future Rules and Regulations**") as may be promulgated by Landlord, from time to time, with respect to the Building, the Property and construction within the Property (collectively, the "**Rules and Regulations**" or "**Rule or Regulation**"). Except in an emergency, Landlord shall give Tenant at least ten (10) business days' written notice prior to promulgating any Future Rule or Regulation. The Current Rules and Regulations consist of the Building Rules and Regulations attached hereto as Exhibit 9-1 and the Construction Rules and Regulations attached hereto as Exhibit 9-2. Landlord hereby agrees that: (i) any future Rules and Regulations shall not discriminate among similarly situated tenants, and (ii) in enforcing any Rules and Regulations, Landlord will not discriminate among similarly situated tenants. In the case of any conflict between the provisions of this Lease and any Rules or Regulation, the provisions of this Lease shall control. Nothing contained in this Lease shall be construed to impose upon Landlord any duty or obligation to enforce the Rules and Regulations or the terms, covenants or conditions in any other lease as against any other tenant and Landlord shall not be liable to Tenant for violation of the same by any other tenant, its servants, employees, agents, contractors, visitors, invitees or licensees. If another tenant of the Building breaches a Rule or Regulation which is applicable to such tenant and such breach materially interferes with Tenant's use of the Premises or the exercise, by Tenant, of its rights under this Lease, Landlord, shall, upon Tenant's written request and at Tenant's cost, use reasonable efforts to cause such tenant to comply with such Rule or Regulation; provided however, that Landlord shall have no liability to Tenant if such tenant fails to comply with such Rule or Regulation.

18.2 Energy Conservation. Landlord may institute upon written notice to Tenant such policies, programs and measures as may be necessary, required, or expedient for the conservation and/or preservation of energy or energy services (collectively, the "**Conservation Program**"), provided however, that either: (i) the Conservation Program is required by Legal Requirements, or (ii) the Conservation Program does not, by reason of such policies, programs and measures, reduce the level of energy or energy services being provided to the Premises below the level of energy or energy services then being provided in comparable combination laboratory, research and development and office buildings in the vicinity of the Premises. Upon receipt of such notice, Tenant shall comply with such Conservation Program.

18.3 Recycling. Upon written notice, Landlord may establish reasonable policies, programs and measures for the recycling of paper, products, plastic, tin and other materials (a "**Recycling Program**"). Upon receipt of such notice, Tenant will comply with the Recycling Program at Tenant's sole cost and expense.

19. LAWS AND PERMITS**.**

19.1 Legal Requirements.

(a) Tenant shall not cause or permit the Premises, or cause the Property or the Building to be used in any way that violates any Legal Requirement, order, permit, approval, variance, covenant or restrictions of record or any provisions of this Lease, interferes with the rights of tenants of the Building, or constitutes a nuisance or waste. Tenant shall obtain, maintain and pay for all permits and approvals needed for the operation of Tenant's business and/or Tenant's Rooftop Equipment, as soon as reasonably possible, and in any event shall not undertake any operations or use of Tenant's Rooftop Equipment unless all applicable permits and approvals are in place and, subject to Section 19.1(b) below, shall, promptly take all actions necessary to comply with all Legal Requirements, including, without limitation, the Occupational Safety and Health Act, applicable to Tenant's use of the Premises, the Property or the Building. Tenant shall maintain in full force and effect all certifications or permissions required by any authority having jurisdiction to authorize, franchise or regulate Tenant's use of the Premises. Tenant shall be solely responsible for procuring and complying at all times with any and all necessary permits and approvals directly or indirectly relating or incident to: the conduct of its activities on the Premises; its scientific experimentation, transportation, storage, handling, use and disposal of any chemical or radioactive or bacteriological or pathological substances or organisms or other hazardous wastes or environmentally dangerous substances or materials or medical waste or animals or laboratory specimens. Within ten (10) days of a request by Landlord, which request shall be made not more than once during each period of twelve (12) consecutive months during the Term hereof, unless otherwise requested by any mortgagee of Landlord or unless Landlord reasonably suspects that Tenant has violated the provisions of this Section 19.1, Tenant shall furnish Landlord with copies of all such permits and approvals that Tenant possesses or has obtained together with a certificate certifying that such permits are all of the permits that Tenant possesses or has obtained with respect to the Premises. Tenant shall promptly give written notice to Landlord of any warnings or violations relative to the above received from any federal, state or municipal agency or by any court of law and shall promptly cure the conditions causing any such violations. Tenant shall not be deemed to be in default of its obligations under the preceding sentence to promptly cure any condition causing any such violation in the event that, in lieu of such cure, Tenant shall contest the validity of such violation by appellate or other proceedings permitted under applicable law, provided that: (i) any such contest is made reasonably and in good faith, (ii) Tenant makes provisions, including, without limitation, posting bond(s) or giving other security, reasonably acceptable to Landlord to protect Landlord, the Building and the Property from any liability, costs, damages or expenses arising in connection with such alleged violation and failure to cure, (iii) Tenant shall agree to indemnify, defend (with counsel reasonably acceptable to Landlord) and hold Landlord harmless from and against any and all liability, costs, damages, or expenses arising in connection with such

condition and/or violation, (iv) Tenant shall promptly cure any violation in the event that its appeal of such violation is overruled or rejected, and (v) Tenant's decision to delay such cure shall not, in Landlord's good faith determination, be likely to result in any actual or threatened bodily injury, property damage, or any civil or criminal liability to Landlord, any tenant or occupant of the Building or the Property, or any other person or entity. Nothing contained in this Section 19.1 shall be construed to expand the uses permitted hereunder beyond the Permitted Uses. Landlord shall comply with any Legal Requirements and with any direction of any public office or officer relating to the maintenance or operation of the structural elements of the Building and the Common Areas, and the costs so incurred by Landlord shall be included in Operating Costs in accordance with the provisions of Section 5.2.

(b) Notwithstanding anything to the contrary in this Lease, Tenant shall not be obligated to comply with any Legal Requirements requiring: (i) Alterations within the Premises resulting by reason of the failure of the Building or any component thereof to comply with Legal Requirements as of the Term Commencement Date; or (ii) structural Alterations to the Building or alterations to the Building's mechanical, electrical, plumbing, life-safety or other systems unless the application of such Legal Requirements arises from: (a) the specific manner and nature of Tenant's use or occupancy of the Premises, as distinct from the Permitted Uses; (b) Alterations made by Tenant; or (c) a breach by Tenant of any provisions of this Lease; or (iii) Tenant to remove any Hazardous Material or substance installed or caused by a party other than Tenant Party or any invitee of Tenant; or (iv) the correction or cure of any defect or deficiency in Landlord's construction whether within or beyond the Premises which Landlord is required to remedy pursuant to Landlord's remedy, as set forth in Exhibit 4; or (v) the performance of any Alterations required by reason of the particular use or modification by another occupant in the Building.

20. DEFAULT

20.1 Events of Default. The occurrence of any one or more of the following events shall constitute an "**Event of Default**" hereunder by Tenant:

(a) If Tenant fails to make any payment of Rent or any other payment required hereunder, as and when due, and such failure shall continue for a period of five (5) business days after notice thereof from Landlord to Tenant; provided, however, an Event of Default shall occur hereunder without any obligation of Landlord to give any notice if (i) Tenant fails to make any payment within five (5) business days after the due date therefor, and (ii) Landlord has given Tenant written notice under this Section 20.1(a) on more than two (2) occasions during the twelve (12) month interval preceding such failure by Tenant;

(b) If Tenant shall fail to execute and deliver to Landlord an estoppel certificate pursuant to Section 16 above or a subordination and attornment agreement pursuant to Section 22 below, within the timeframes set forth therein;

(c) If Tenant shall fail to maintain any insurance required hereunder;

(d) If Tenant shall fail to restore the Security Deposit to its original amount or deliver a replacement Letter of Credit as required under Section 7 above;

(e) If Tenant causes or suffers any release of Hazardous Materials in or near the Property;

(f) If Tenant shall make a Transfer in violation of the provisions of Section 13 above, or if any event shall occur or any contingency shall arise whereby this Lease, or the term and estate thereby created, would (by operation of law or otherwise) devolve upon or pass to any person, firm or corporation other than Tenant, except as expressly permitted under Section 13 hereof;

(g) If Tenant shall fail to perform its obligations under Section 3 hereof and such failure continues for more than thirty (30) days after notice thereof from Landlord;

(h) The failure by Tenant to observe or perform any of the covenants or provisions of this Lease to be observed or performed by Tenant, other than as specified above, and such failure continues for more than thirty (30) days after notice thereof from Landlord; provided, further, that if the nature of Tenant's default is such that more than thirty (30) days are reasonably required for its cure, then Tenant shall not be deemed to be in default if Tenant shall commence such cure within said thirty-(30)-day period and thereafter diligently prosecute such cure to completion;

(i) Intentionally Deleted;

(j) Tenant shall make an assignment or trust mortgage, or other conveyance or transfer of like nature, of all or a substantial part of its property for the benefit of its creditors,

(k) an attachment on mesne process, on execution or otherwise, or other legal process shall issue against Tenant or its property and a sale of any of its assets shall be held thereunder;

(l) any judgment, attachment or the like in excess of $100,000 shall be entered, recorded or filed against Tenant in any court, registry, etc. and Tenant shall fail to pay such judgment within thirty (30) days after the judgment shall have become final beyond appeal or to discharge or secure by surety bond such lien, attachment, etc. within thirty (30) days of such entry, recording or filing, as the case may be;

(m) the leasehold hereby created shall be taken on execution or by other process of law and shall not be revested in Tenant within thirty (30) days thereafter;

(n) a receiver, sequesterer, trustee or similar officer shall be appointed by a court of competent jurisdiction to take charge of all or any part of Tenant's Property and such appointment shall not be vacated within thirty (30) days; or

(o) any proceeding shall be instituted by or against Tenant pursuant to any of the provisions of any Act of Congress or State law relating to bankruptcy, reorganizations,

arrangements, compositions or other relief from creditors, and, in the case of any proceeding instituted against it, if Tenant shall fail to have such proceedings dismissed within thirty (30) days or if Tenant is adjudged bankrupt or insolvent as a result of any such proceeding.

Wherever "**Tenant** " is used in subsections (i), (j), (k), (l), (n) or (o) of this Section 20.1, it shall be deemed to include any parent entity of Tenant and any guarantor of any of Tenant's obligations under this Lease.

20.2 Remedies. Upon an Event of Default, Landlord may, by notice to Tenant, elect to terminate this Lease; and thereupon (and without prejudice to any remedies which might otherwise be available for arrears of Rent or preceding breach of covenant or agreement and without prejudice to Tenant's liability for damages as hereinafter stated), upon the giving of such notice, this Lease shall terminate as of the date specified therein as though that were the Expiration Date. Upon such termination, Landlord shall have the right to utilize the Security Deposit or draw down the entire Letter of Credit, as applicable, and apply the proceeds thereof to its damages hereunder. Without being taken or deemed to be guilty of any manner of trespass or conversion, and without being liable to indictment, prosecution or damages therefor, Landlord may, by lawful process, enter into and upon the Premises (or any part thereof in the name of the whole); repossess the same, as of its former estate; and expel Tenant and those claiming under Tenant. The words "**re-entry**" and "**re-enter**" as used in this Lease are not restricted to their technical legal meanings.

20.3 Damages - Termination.

(a) Upon the termination of this Lease under the provisions of this Section 20, Tenant shall pay to Landlord Rent up to the time of such termination, shall continue to be liable for any preceding breach of covenant, and in addition, shall pay to Landlord as damages, at the election of Landlord, either:

(i) the amount (discounted to present value at the rate of five percent (5%) per annum) by which, at the time of the termination of this Lease (or at any time thereafter if Landlord shall have initially elected damages under Section 20.3(a)(ii) below), (x) the aggregate of Rent projected over the period commencing with such termination and ending on the Expiration Date, exceeds (y) the aggregate projected rental value of the Premises for such period, taking into account a reasonable time period during which the Premises shall be unoccupied, plus all Reletting Costs (hereinafter defined); or

(ii) or in the event of a relet, amounts equal to Rent which would have been payable by Tenant had this Lease not been so terminated, payable upon the due dates therefor specified herein following such termination and until the Expiration Date, provided, however, if Landlord shall re-let the Premises during such period, that Landlord shall credit Tenant with the net rents received by Landlord from such re-letting, such net rents to be determined by first deducting from the gross rents as and when received by Landlord from such re-letting the expenses incurred or paid by Landlord in terminating this Lease, as well as the expenses of re-letting, including altering and preparing the Premises for new tenants, brokers' commissions, and all other similar and dissimilar expenses properly chargeable against the

Premises and the rental therefrom (collectively, "**Reletting Costs**"), it being understood that any such re-letting may be for a period equal to or shorter or longer than the remaining Term; and provided, further, that (x) in no event shall Tenant be entitled to receive any excess of such net rents over the sums payable by Tenant to Landlord hereunder and (y) in no event shall Tenant be entitled in any suit for the collection of damages pursuant to this Section 20.3(a)(ii) to a credit in respect of any net rents from a re-letting except to the extent that such net rents are actually received by Landlord prior to the commencement of such suit. If the Premises or any part thereof should be re-let in combination with other space, then proper apportionment on a square foot area basis shall be made of the rent received from such re-letting and of the expenses of re-letting.

(b) In calculating the amount due under Section 20.3(a)(i), above, there shall be included, in addition to the Base Rent, all other considerations agreed to be paid or performed by Tenant, including without limitation Tenant's Share of Operating Costs and Taxes, on the assumption that all such amounts and considerations would have increased at the rate of three percent (3%) per annum for the balance of the full term hereby granted.

(c) Suit or suits for the recovery of such damages, or any installments thereof, may be brought by Landlord from time to time at its election, and nothing contained herein shall be deemed to require Landlord to postpone suit until the date when the Term would have expired if it had not been terminated hereunder.

(d) Nothing herein contained shall be construed as limiting or precluding the recovery by Landlord against Tenant of any sums or damages to which, in addition to the damages particularly provided above, Landlord may lawfully be entitled by reason of any Event of Default hereunder.

(e) In lieu of any other damages or indemnity and in lieu of full recovery by Landlord of all sums payable under all the foregoing provisions of this Section 20.3, Landlord may, by written notice to Tenant, at any time after this Lease is terminated under any of the provisions herein contained or is otherwise terminated for breach of any obligation of Tenant and before such full recovery, elect to recover, and Tenant shall thereupon pay, as liquidated damages, an amount equal to the aggregate of (x) an amount equal to the lesser of (1) Rent accrued under this Lease in the twelve (12) months immediately prior to such termination, or (2) Rent payable during the remaining months of the Term if this Lease had not been terminated, plus (y) the amount of Rent accrued and unpaid at the time of termination, less (z) the amount of any recovery by Landlord under the foregoing provisions of this Section 20.3 up to the time of payment of such liquidated damages.

20.4 Landlord's Self-Help; Fees and Expenses.

(a) If Tenant shall default in the performance of any covenant on Tenant's part to be performed in this Lease contained, including without limitation the obligation to maintain the Premises in the required condition pursuant to Section 10.1 above, Landlord may, upon reasonable advance notice, except that no notice shall be required in an emergency, immediately, or at any time thereafter, perform the same for the account of Tenant. Tenant shall pay to

Landlord within ten (10) days of demand therefor any reasonable costs incurred by Landlord in connection therewith, together with interest at the Default Rate until paid in full.

(b) In the event that Landlord and Tenant are involved in any litigation regarding the performance of any of their obligations under this Lease, the unsuccessful party by final non-appealable order, decree or judgment in such litigation by a court of competent jurisdiction shall reimburse the successful party for all reasonable legal fees and expenses incurred by such successful party in connection with obtaining such final un-appealable order, decree or judgment.

(c) In circumstances where there is no litigation involving Landlord and Tenant, Tenant shall pay all of Landlord's costs and expenses, including without limitation reasonable attorneys' fees, incurred in enforcing any obligation of Tenant under this Lease that Tenant failed to perform after lapse of any applicable notice and cure period. If, Landlord, or any Landlord Party, is made party to any litigation pending by or against any of the Tenant Parties and it is ultimately finally determined or agreed to by Tenant that Landlord or such Landlord Party, was not at fault in connection with the matter which is the basis of such litigation, then Tenant shall pay all of reasonable out-of-pocket costs and expenses, including without limitation reasonable attorneys' fees, incurred by Landlord or such Landlord Party in connection with such litigation.

20.5 Waiver of Redemption, Statutory Notice and Grace Periods. Tenant does hereby waive and surrender all rights and privileges which it might have under or by reason of any present or future Legal Requirements to redeem the Premises or to have a continuance of this Lease for the Term hereby demised after being dispossessed or ejected therefrom by process of law or under the terms of this Lease or after the termination of this Lease as herein provided. Except to the extent prohibited by Legal Requirements, any statutory notice and grace periods provided to Tenant by law are hereby expressly waived by Tenant.

20.6 Landlord's Remedies Not Exclusive. The specified remedies to which Landlord may resort hereunder are cumulative and are not intended to be exclusive of any remedies or means of redress to which Landlord may at any time be lawfully entitled, and Landlord may invoke any remedy (including the remedy of specific performance) allowed at law or in equity as if specific remedies were not herein provided for.

20.7 No Waiver. Landlord's failure to seek redress for violation, or to insist upon the strict performance, of any covenant or condition of this Lease, or any of the Rules and Regulations promulgated hereunder, shall not prevent a subsequent act, which would have originally constituted a violation, from having all the force and effect of an original violation. The receipt by Landlord of Rent with knowledge of the breach of any covenant of this Lease shall not be deemed a waiver of such breach. The failure of Landlord to enforce any of such Rules and Regulations against Tenant and/or any other tenant in the Building shall not be deemed a waiver of any such Rules and Regulations. No provisions of this Lease shall be deemed to have been waived by either party unless such waiver be in writing signed by such party. No payment by Tenant or receipt by Landlord of a lesser amount than the Rent herein stipulated shall be deemed to be other than on account of the stipulated Rent, nor shall any endorsement or

statement on any check or any letter accompanying any check or payment as Rent be deemed an accord and satisfaction, and Landlord may accept such check or payment without prejudice to Landlord's right to recover the balance of such Rent or pursue any other remedy in this Lease provided.

20.8 Restrictions on Tenant's Rights. During the continuation of any Event of Default, (a) Landlord shall not be obligated to provide Tenant with any notice pursuant to Sections 2.3 and 2.4 above; and (b) Tenant shall not have the right to make, nor to request Landlord's consent or approval with respect to, any Alterations or Transfers.

20.9 Landlord Default. Notwithstanding anything to the contrary contained in the Lease, Landlord shall in no event be in default in the performance of any of Landlord's obligations under this Lease unless Landlord shall have failed to perform such obligations within thirty (30) days (or such additional time as is reasonably required to correct any such default, provided Landlord commences cure within 30 days) after notice by Tenant to Landlord properly specifying wherein Landlord has failed to perform any such obligation. Landlord shall reimburse Tenant for any reasonable third party out-of-pocket costs incurred by Tenant in connection with curing a Landlord default. Except as expressly set forth in this Lease, Tenant shall not have the right to terminate or cancel this Lease or to withhold rent or to set-off or deduct any claim for damages against rent as a result of any default by Landlord or breach by Landlord of its covenants or any warranties or promises hereunder. In addition, Tenant shall not assert any right to deduct the cost of repairs or any monetary claim against Landlord from rent thereafter due and payable under this Lease.

21. SURRENDER; ABANDONED PROPERTY; HOLD-OVER

21.1 Surrender

(a) Upon the expiration or earlier termination of the Term, Tenant shall (i) peaceably quit and surrender to Landlord the Premises (including without limitation all fixed lab benches, fume hoods, electric, plumbing, heating and sprinkling systems, fixtures and outlets, vaults, paneling, molding, shelving, radiator enclosures, cork, rubber, linoleum and composition floors, ventilating, silencing, air conditioning and cooling equipment therein and all other furniture, fixtures, and equipment that was either provided by Landlord or paid for in whole or in part by any allowance provided to Tenant by Landlord under this Lease) broom clean, in the same condition as Tenant is required to maintain the Premises under this Lease excepting only reasonable wear and tear and damage by fire or other Casualty; (ii) remove all of Tenant's Property, all autoclaves and cage washers and, to the extent specified by Landlord, at the time Tenant requested Landlord's consent, Alterations made by Tenant; and (iii) repair any damages to the Premises or the Building caused by the installation or removal of Tenant's Property and/or such Alterations. Notwithstanding anything in this Lease to the contrary, Landlord shall not require Tenant to remove any of the Landlord's Work from the Premises upon the expiration or earlier termination of this Lease, except for such Required Removables, if any, as are set forth on Exhibit 13. Tenant's obligations under this Section 21.1(a) shall survive the expiration or earlier termination of this Lease.

(b) Prior to the expiration of this Lease (or within thirty (30) days after any earlier termination), Tenant shall clean and otherwise decommission all interior surfaces (including floors, walls, ceilings, and counters), piping, supply lines, waste lines, acid neutralization systems and plumbing in and/or exclusively serving the Premises, and all exhaust or other ductwork in and/or exclusively serving the Premises, in each case which has carried or released or been contacted by any Hazardous Materials or other chemical or biological materials used in the operation of the Premises, and shall otherwise clean the Premises so as to permit the Surrender Plan (defined below) to be issued. At least thirty (30) days prior to the expiration of the Term (or, if applicable, within five (5) business days after any earlier termination of this Lease), Tenant shall deliver to Landlord a reasonably detailed narrative description of the actions proposed (or required by any Legal Requirements) to be taken by Tenant in order to render the Premises (including any Alterations permitted or required by Landlord to remain therein) free of Hazardous Materials and otherwise released for unrestricted use and occupancy including without limitation causing the Premises to be decommissioned in accordance with the regulations of the U.S. Nuclear Regulatory Commission and/or the Massachusetts Department of Public health (the "**MDPH**") for the control of radiation, and cause the Premises to be released for unrestricted use by the Radiation Control Program of the MDPH (the "**Surrender Plan**"). The Surrender Plan (i) shall be accompanied by a current list of (A) all Required Permits held by or on behalf of any Tenant Party with respect to Hazardous Materials in, on, under, at or about the Premises, and (B) Tenant's Hazardous Materials, and (ii) shall be subject to the review and approval of Landlord's environmental consultant, such approval not to be unreasonably withheld, conditioned, or delayed. In connection with review and approval of the Surrender Plan, upon request of Landlord, Tenant shall deliver to Landlord or its consultant such additional non-proprietary information concerning the use of and operations within the Premises as Landlord shall reasonably request. On or before the expiration of the Term (or within thirty (30) days after any earlier termination of this Lease, during which period Tenant's use and occupancy of the Premises shall be governed by Section 21.3 below), Tenant shall (i) perform or cause to be performed all actions described in the approved Surrender Plan, and (ii) deliver to Landlord a certification from a third party certified industrial hygienist reasonably acceptable to Landlord certifying that the Premises do not contain any Hazardous Materials and evidence that the approved Surrender Plan shall have been reasonably satisfactorily completed by a contractor acceptable to Landlord, and Landlord shall have the right, subject to reimbursement at Tenant's expense as set forth below, to cause Landlord's environmental consultant to inspect the Premises and perform such additional procedures as may be deemed reasonably necessary to confirm that the Premises are, as of the expiration of the Term (or, if applicable, the date which is thirty (30) days after any earlier termination of this Lease), free of Hazardous Materials and otherwise available for unrestricted use and occupancy as aforesaid. Landlord shall have the unrestricted right to deliver the Surrender Plan and any report by Landlord's environmental consultant with respect to the surrender of the Premises to third parties. Such third parties and the Landlord Parties shall be entitled to rely on the Surrender Report. If Tenant shall fail to prepare or submit a Surrender Plan approved by Landlord, or if Tenant shall fail to complete the approved Surrender Plan, or if such Surrender Plan, whether or not approved by Landlord, shall fail to adequately address the use of Hazardous Materials by any of the Tenant Parties in, on, at, under or about the Premises, Landlord shall have the right to take any such actions as Landlord may deem reasonable or appropriate to assure that the Premises and the Property are surrendered in

the condition required hereunder, the cost of which actions shall be reimbursed by Tenant as Additional Rent within ten (10) days of demand. Tenant's obligations under this Section 21.1(b) shall survive the expiration or earlier termination of the Term.

(c) No act or thing done by Landlord during the Term shall be deemed an acceptance of a surrender of the Premises, and no agreement to accept such surrender shall be valid, unless in writing signed by Landlord. Unless otherwise agreed by the parties in writing, no employee of Landlord or of Landlord's agents shall have any power to accept the keys of the Premises prior to the expiration or earlier termination of this Lease. The delivery of keys to any employee of Landlord or of Landlord's agents shall not operate as a termination of this Lease or a surrender of the Premises.

(d) Notwithstanding anything to the contrary contained herein, Tenant shall, at its sole cost and expense, remove from the Premises, prior to the end of the Term, any item installed by or for Tenant and which, pursuant to Legal Requirements, must be removed therefrom before the Premises may be used by a subsequent tenant.

21.2 Abandoned Property. If Tenant fails to remove any property from the Building or the Premises which Tenant is obligated by the terms of this Lease to remove: (i) on or before the expiration of the Term of the Lease, or (ii) on or before the date five (5) business days after the earlier termination of the Term of the Lease, such property (the "**Abandoned Property**") shall be conclusively deemed to have been abandoned, and may either be retained by Landlord as its property or sold or otherwise disposed of in such manner as Landlord may see fit. If any item of Abandoned Property shall be sold, Tenant hereby agrees that Landlord may receive and retain the proceeds of such sale and apply the same, at its option, to the expenses of the sale, the cost of moving and storage, any damages to which Landlord may be entitled under Section 20 hereof or pursuant to law, and to any arrears of Rent.

21.3 Holdover. If any of the Tenant Parties holds over (which term shall include, without limitation, the failure of Tenant or any Tenant Party to perform all of its obligations under Section 21.1 above) after the end of the Term, Tenant shall be deemed a tenant-at-sufferance subject to the provisions of this Lease. Whether or not Landlord has previously accepted payments of Rent from Tenant:

(i) Tenant shall pay Base Rent at the Hold Over Percentage, as hereinafter defined, of the highest rate of Base Rent payable during the Term,

(ii) Tenant shall continue to pay to Landlord all Additional Rent, and

(iii) in the event such hold over extends beyond thirty (30) days after the end of the Term, Tenant shall be liable for all damages, including without limitation lost business and consequential damages, incurred by Landlord as a result of such holding over, Tenant hereby acknowledging that Landlord may need the Premises after the end of the Term for other tenants and that the damages which Landlord may suffer as the result of Tenant's holding over cannot be determined as of the Execution Date.

The "**Hold Over Percentage**" shall be 150% for the initial thirty (30) days of such holdover, and 200% for any period of hold over after the initial thirty (30) days. Nothing contained herein shall grant Tenant the right to holdover after the expiration or earlier termination of the Term.

21.4 Warranties. Tenant hereby assigns to Landlord any warranties in effect on the last day of the Term with respect to any fixtures and Alterations installed in the Premises. Tenant shall provide Landlord with copies of any such warranties prior to the expiration of the Term (or, if the Lease is earlier terminated, within five (5) days thereafter).

22. MORTGAGEE RIGHTS

22.1 Subordination. Tenant's rights and interests under this Lease shall be subject and subordinate to: (i) any ground lease and any other overlease, and (ii) the lien of any mortgage, deed of trust, or similar instrument covering the Premises, the Building and/or the Land and to all advances, modifications, renewals, replacements, and extensions thereof (each of the foregoing, a "**Mortgage**"), or (ii) if any Mortgagee elects, prior to the lien of any present or future Mortgage. Tenant further shall attorn to and recognize any successor landlord, whether through foreclosure or otherwise, as if the successor landlord were the originally named landlord. The provisions of this Section 22.1 shall be self-operative and no further instrument shall be required to effect such subordination or attornment; however, Tenant agrees to execute, acknowledge and deliver such instruments, confirming such subordination and attornment in such form as shall be requested by any such holder within fifteen (15) days of request therefor. Landlord agrees to use reasonable efforts to obtain an SNDA, as hereinafter defined, from the holder of the mortgage which affects the Property as of the Execution Date of the Lease. In addition, notwithstanding the foregoing, it shall be a condition to Tenant's obligation to subordinate the Lease to any future and from the holder of any future Mortgage that the holder of such future Mortgage enters into an SNDA with Tenant. An "**SNDA**" shall be defined as a subordination, non-disturbance and attornment agreement on the standard form of SNDA then being used by the holder of the Mortgage in question, with such commercially reasonable modifications as may be requested by Tenant. Tenant shall pay any reasonable charges (including legal fees) required by such holder as a condition to entering into such SNDA.

22.2 Notices. Tenant shall give each Mortgagee, of which Tenant has notice, the same notices given to Landlord concurrently with the notice to Landlord, and each Mortgagee shall have a reasonable opportunity thereafter to cure a Landlord default, and Mortgagee's curing of any of Landlord's default shall be treated as performance by Landlord.

22.3 Mortgagee Consent. Tenant acknowledges that, where applicable, any consent or approval hereafter given by Landlord may be subject to the further consent or approval of a Mortgagee.

22.4 Mortgagee Liability. Tenant acknowledges and agrees that if any Mortgage shall be foreclosed, (a) the liability of the Mortgagee and its successors and assigns shall exist only so long as such Mortgagee or purchaser is the owner of the Premises, and such liability shall not continue or survive after further transfer of ownership; and (b) such Mortgagee and its successors or assigns shall not be (i) liable for the performance of Landlord's covenants pursuant to the

provisions of this Lease which arise and accrue prior to such entity succeeding to the interest of Landlord under this Lease or acquiring such right to possession; (ii) subject to any offsets or defense which Tenant may have at any time against Landlord; (iii) bound by any base rent or other sum which Tenant may have paid previously for more than one (1) month; or (iv) liable for the performance of any covenant of Landlord under this Lease which is capable of performance only by the original Landlord, and (c) the SNDA between such Mortgagee and Tenant may provide other commercially reasonable limitations of the liability of such Mortgagee.

23. QUIET ENJOYMENT**.**

Landlord covenants that so long as Tenant keeps and performs each and every covenant, agreement, term, provision and condition herein contained on the part and on behalf of Tenant to be kept and performed within any applicable notice and cure periods, Tenant shall peaceably and quietly hold, occupy and enjoy the Premises during the Term from and against the claims of all persons lawfully claiming by, through or under Landlord subject, nevertheless, to the covenants, agreements, terms, provisions and conditions of this Lease, any matters of record or of which Tenant has knowledge and to any Mortgage to which this Lease is subject and subordinate, as hereinabove set forth.

24. NOTICES**.**

Any notice, consent, request, bill, demand or statement hereunder (each, a "**Notice**") by either party to the other party shall be in writing and shall be deemed to have been duly given when either delivered by hand or by nationally recognized overnight courier (in either case with evidence of delivery or refusal thereof) addressed as follows:

If to Landlord:	HCP/King Hayden Campus LLC c/o King Street Properties 200 Cambridge Park Drive Cambridge, MA 02140 Attention: Stephen D. Lynch
With a copy to:	Goulston & Storrs PC 400 Atlantic Avenue Boston, MA 02110 Attention: King Street
if to Tenant:	Concert Pharmaceuticals, Inc. 65 Hayden Avenue Lexington, MA 02421 Attention: General Counsel
With a copy to:	Ropes & Gray LLP Prudential Tower 800 Boylston Street Boston, MA 021909-3600 Attention: Christopher F. Dunn, Esq.

Notwithstanding the foregoing, any notice from Landlord to Tenant regarding ordinary business operations (e.g., exercise of a right of access to the Premises, maintenance activities, invoices, etc.) may also be given by written notice delivered by facsimile to any person at the Premises whom Landlord reasonably believes is authorized to receive such notice on behalf of Tenant without copies as specified above. Either party may at any time change the address or specify an additional address for such Notices by delivering or mailing, as aforesaid, to the other party a notice stating the change and setting forth the changed or additional address, provided such changed or additional address is within the United States. Notices shall be effective upon the date of receipt or refusal thereof.

25. MISCELLANEOUS

25.1 Separability. If any provision of this Lease or portion of such provision or the application thereof to any person or circumstance is for any reason held invalid or unenforceable, the remainder of this Lease (or the remainder of such provision) and the application thereof to other persons or circumstances shall not be affected thereby.

25.2 Captions. The captions are inserted only as a matter of convenience and for reference, and in no way define, limit or describe the scope of this Lease nor the intent of any provisions thereof.

25.3 Broker. Tenant and Landlord each warrants and represents that it has dealt with no broker in connection with the consummation of this Lease other than Newmark Knight Frank and Jones Lang LaSalle (collectively, "**Broker**"). Tenant and Landlord each agrees to defend, indemnify and save the other harmless from and against any Claims arising in breach of the representation and warranty set forth in the immediately preceding sentence. Landlord shall be solely responsible for the payment of any brokerage commissions to Broker.

25.4 Entire Agreement. This Lease, Lease Summary Sheet and Exhibits 1-12 attached hereto and incorporated herein contain the entire and only agreement between the parties and any and all statements and representations, written and oral, including previous correspondence and agreements between the parties hereto, are merged herein. Tenant acknowledges that all representations and statements upon which it relied in executing this Lease are contained herein and that Tenant in no way relied upon any other statements or representations, written or oral. This Lease may not be modified orally or in any manner other than by written agreement signed by the parties hereto.

25.5 Governing Law. This Lease is made pursuant to, and shall be governed by, and construed in accordance with, the laws of the Commonwealth of Massachusetts and any applicable local municipal rules, regulations, by-laws, ordinances and the like.

25.6 Representation of Authority. By his or her execution hereof, each of the signatories on behalf of the respective parties hereby warrants and represents to the other that he or she is duly authorized to execute this Lease on behalf of such party. Upon Landlord's request, Tenant shall provide Landlord with evidence that any requisite resolution, corporate authority and any other necessary consents have been duly adopted and obtained.

25.7 Expenses Incurred by Landlord Upon Tenant Requests. Subject to the provisions of this Section 25.7, Tenant shall, within ten (10) business days of demand, reimburse Landlord for all reasonable expenses, including, without limitation, reasonable legal fees, incurred by Landlord in connection with all requests by Tenant for consents, approvals or execution of collateral documentation related to this Lease, including, without limitation, costs incurred by Landlord in the review and approval of Tenant's plans and specifications in connection with proposed Alterations to be made by Tenant to the Premises or in connection with requests by Tenant for Landlord's consent to make a Transfer. Such costs shall be deemed to be Additional Rent under this Lease. Notwithstanding the foregoing: (i) the amount of legal fees which Tenant is required to reimburse Landlord with respect to any Transfer shall not exceed the Transfer Legal Fee Cap, as hereinafter defined, with respect to such Transfer, and (ii) with respect any request by Tenant to review and approve Tenant's plans and specifications with respect to any Alteration, Tenant shall only be required to reimburse Landlord for third party consultants engaged by Landlord to review such plans and specifications as Landlord, in good faith determines is necessary (e.g., reviews by structure engineers, MEP engineers, etc.). The "**Transfer Legal Fees Cap**" shall be defined as $2,000, except that: (a) the Transfer Legal Fees Cap shall increase by $500 every fifth anniversary of the Base Rent Commencement Date, and (b) the Transfer Legal Fees Cap shall not apply to Tenant's request for Landlord's approval of any sub-sublease of any tier.

25.8 Survival. Without limiting any other obligation of Tenant which may survive the expiration or prior termination of the Term, all obligations on the part of Tenant and Landlord to indemnify, defend, or hold each other harmless, as set forth in this Lease shall survive the expiration or prior termination of the Term.

25.9 Limitations of Liability.

(a) ***Limitations on Landlord's Liability***. Tenant shall neither assert nor seek to enforce any claim against Landlord or any of the Landlord Parties, or the assets of any of the Landlord Parties, for breach of this Lease or otherwise, other than against Landlord's interest in the Building, including insurance and condemnation proceeds (subject, however, to the rights of Landlord, to use such proceeds or awards for reconstruction prior to Tenant's rights to reach any such proceeds), the proceeds from the sale or refinancing hereof, and in the uncollected rents, issues and profits of Landlord's interest in the Building, and Tenant agrees to look solely to such interest for the satisfaction of any liability of Landlord under this Lease. This Section 25.9 shall not limit any right that Tenant might otherwise have to obtain injunctive relief against Landlord. Landlord and Tenant specifically agree that in no event shall any officer, director, trustee, employee or representative of Landlord or any of the other Landlord Parties ever be personally liable for any obligation under this Lease, nor shall Landlord or any of the other Landlord Parties be liable for consequential or incidental damages or for lost profits whatsoever in connection with this Lease.

(b) ***Limitations on Tenant's Liability***. In no event shall: (i) any officer, director, trustee, employee or representative of Tenant or any of the other Tenant Parties ever be personally liable for any obligation under this Lease, and (ii) Tenant or any of the other Tenant

Parties be liable for consequential or incidental damages or for lost profits whatsoever in connection with this Lease, except that nothing in this Section 25.9 shall limit or affect any liability or obligation which Tenant may have in the event of any breach by Tenant of its obligations under either Section 17 (Hazardous Materials) or Section 21.3 (Holdover).

25.10 Binding Effect. The covenants, agreements, terms, provisions and conditions of this Lease shall bind and benefit the successors and assigns of the parties hereto with the same effect as if mentioned in each instance where a party hereto is named or referred to, except that no violation of the provisions of Section 13 hereof shall operate to vest any rights in any successor or assignee of Tenant.

25.11 Landlord Obligations upon Transfer. Upon any sale, transfer or other disposition of the Building, Landlord shall be entirely freed and relieved from the performance and observance thereafter of all covenants and obligations hereunder on the part of Landlord to be performed and observed (except that Landlord shall be responsible for the return of the Security Deposit unless Landlord transfers the Security Deposit to such successor owner of the Building) it being understood and agreed in such event (and it shall be deemed and construed as a covenant running with the land) that the person succeeding to Landlord's ownership of said reversionary interest shall thereupon and thereafter assume, and perform and observe, any and all of such covenants and obligations of Landlord, except as otherwise agreed in writing.

25.12 No Grant of Interest. Tenant shall not grant any interest whatsoever in any fixtures within the Premises or any item paid in whole or in part by Landlord's Contribution or by Landlord.

25.13 Financial Information. Subject to the provisions of this Section 25.13, Tenant shall deliver to Landlord, within thirty (30) days after Landlord's reasonable request (but in no event more than once in any twelve (12) month period, except in connection with a proposed sale or refinancing of the Building and/or in connection with any Event of Default by Tenant), Tenant's most recently completed balance sheet and related statements of income, shareholder's equity and cash flows statements (audited if available) reviewed by an independent certified public accountant and certified by an officer of Tenant as being true and correct in all material respects. Any such financial information may be relied upon by any actual or potential lessor, purchaser, or mortgagee of the Property or any portion thereof. Notwithstanding the provisions of this Section 25.13, this Section shall not apply so long as the holder of Tenant's interest under the Lease is a publicly traded entity.

25.14 OFAC Certificate and Indemnity. Executive Order No. 13224 on Terrorist Financing, effective September 24, 2001 (the "**Executive Order**"), and the Uniting and Strengthening America by Providing Appropriate Tools Required to Intercept and Obstruct Terrorism Act of 2001 (Public Law 10756, the "**Patriot Act**") prohibit certain property transfers. Tenant hereby represents and warrants to Landlord (which representations and warranties shall be deemed to be continuing and re-made at all times during the Term) that neither Tenant nor any stockholder, manager, beneficiary, partner, or principal of Tenant is subject to the Executive Order, that none of them is listed on the United States Department of the Treasury Office of Foreign Assets Control ("**OFAC**") list of "**Specially Designated Nationals and Blocked**

Persons" as modified from time to time, and that none of them is otherwise subject to the provisions of the Executive Order or the Patriot Act. The most current list of "**Specially Designated Nationals and Blocked Persons**" can be found at http://www.treas.gov/offices/eotffc/ofac/sdn/index.html. Tenant shall from time to time, within ten days after request by Landlord, deliver to Landlord any certification or other evidence requested from time to time by Landlord in its reasonable discretion, confirming Tenant's compliance with these provisions. No assignment or subletting shall be effective unless and until the assignee or subtenant thereunder delivers to Landlord written confirmation of such party's compliance with the provisions of this subsection, in form and content reasonably satisfactory to Landlord. If for any reason the representations and warranties set forth in this subsection, or any certificate or other evidence of compliance delivered to Landlord hereunder, is untrue in any respect when made or delivered, or thereafter becomes untrue in any respect, then an Event of Default hereunder shall be deemed to occur immediately, and there shall be no opportunity to cure. The provisions of this subsection shall survive the expiration or earlier termination of this Lease for the longest period permitted by law.

25.15 Confidentiality. Tenant acknowledges and agrees that the terms of this Lease are confidential. Disclosure of the terms hereof could adversely affect the ability of Landlord to negotiate other leases with respect to the Building and may impair Landlord's relationship with other tenants of the Building. Tenant agrees that it and its partners, officers, directors, employees, brokers, and attorneys, if any, shall not disclose the terms and conditions of this Lease to any other person or entity without the prior written consent of Landlord which may be given or withheld by Landlord, in Landlord's sole discretion, except as required for financial disclosures or securities filings, as required by the order of any court or public body with authority over Tenant, or in connection with any litigation between Landlord and Tenant with respect this Lease. It is understood and agreed that damages alone would be an inadequate remedy for the breach of this provision by Tenant, and Landlord shall also have the right to seek specific performance of this provision and to seek injunctive relief to prevent its breach or continued breach.

25.16 Force Majeure. Other than for Tenant's obligations under this Lease that can be performed by the payment of money (e.g., payment of Rent and maintenance of insurance), whenever a period of time is herein prescribed for action to be taken by either party hereto, such party shall not be liable or responsible for, and there shall be excluded from the computation of any such period of time, any delays due to strikes, riots, acts of God, shortages of labor or materials, war, acts of terrorism, governmental laws, regulations, or restrictions, or any other causes of any kind whatsoever which are beyond the control of such party (collectively "**Force Majeure**"). In no event shall financial inability of a party be deemed to be Force Majeure.

[REMAINDER OF PAGE BLANK; SIGNATURE PAGE TO FOLLOW]

IN WITNESS WHEREOF the parties hereto have executed this Lease as a sealed instrument as of the Execution Date.

LANDLORD

HCP/KING HAYDEN CAMPUS LLC,
a Delaware limited liability company

By: King Mattingly LLC, a Massachusetts limited liability company, its Manager

By: King Street Properties Investments LLC, a Massachusetts limited liability company, its Manager

By: /s/ Thomas Ragno
Name: Thomas Ragno
Its Manager

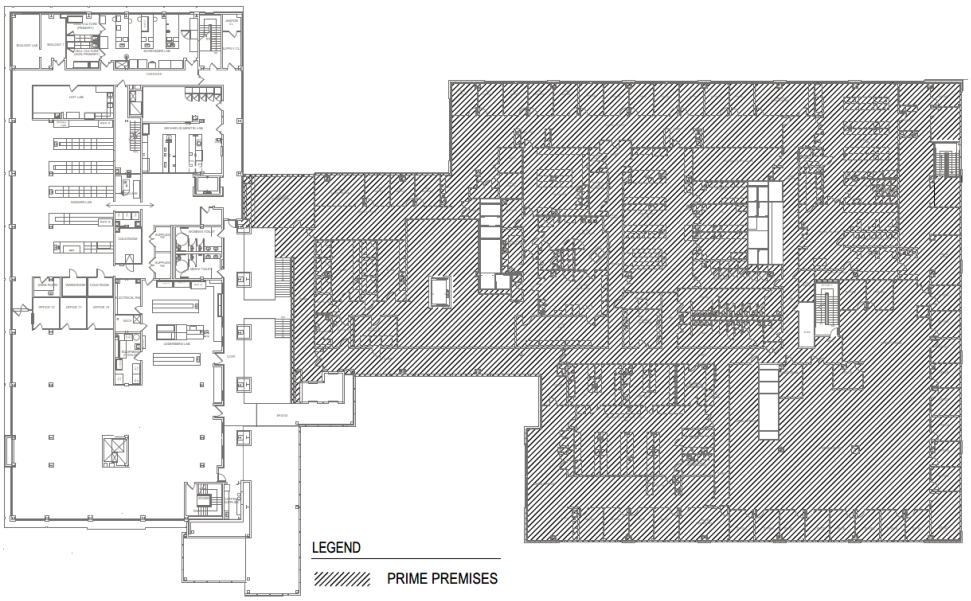
TENANT

CONCERT PHARMACEUTICALS, INC.,
a Delaware corporation

By: /s/ Nancy Stuart
Name: Nancy Stuart
Title: Chief Operating Officer

EXHIBIT 1A

LEASE PLAN – PRIME PREMISES



PROJECT NAME
CONCERT PHARMACEUTICALS

65 HAYDEN AVE
LEXINGTON, MASSACHUSETTS

R.E. DINNEEN ARCHITECTS & PLANNERS, INC.
123 North Washington Street Boston, Massachusetts 02114-2143 tel 617 227 7727 fax 617 227 1870

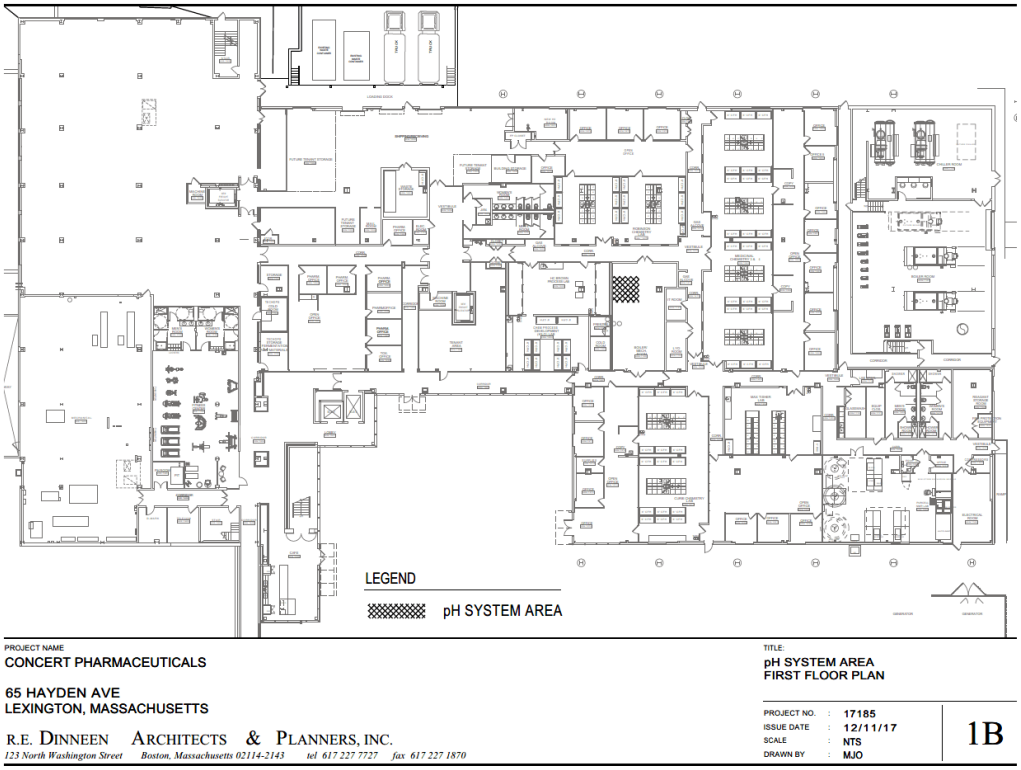
TITLE:
PRIME PREMISES PLAN
THIRD FLOOR PLAN

PROJECT NO. : 17185
ISSUE DATE : 11/16/17
SCALE : NTS
DRAWN BY : MJO

1A

EXHIBIT 1B

LEASE PLAN – PH SYSTEM AREA AND PREMISES



PROJECT NAME
CONCERT PHARMACEUTICALS

65 HAYDEN AVE
LEXINGTON, MASSACHUSETTS

R.E. DINNEEN ARCHITECTS & PLANNERS, INC.
123 North Washington Street Boston, Massachusetts 02114-2143 tel 617 227 7727 fax 617 227 1870

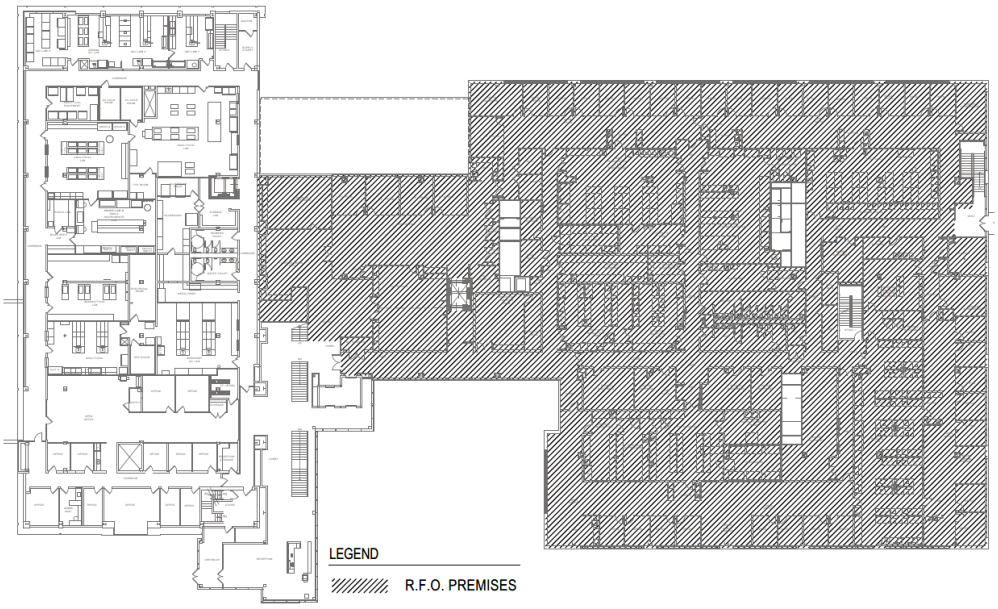
TITLE:
pH SYSTEM AREA
FIRST FLOOR PLAN

PROJECT NO. : 17185
ISSUE DATE : 12/11/17
SCALE : NTS
DRAWN BY : MJO

1B

EXHIBIT 1C, SHEET 1

LEASE PLAN – RFO PREMISES (SECOND FLOOR)



PROJECT NAME
CONCERT PHARMACEUTICALS

65 HAYDEN AVE
LEXINGTON, MASSACHUSETTS

R.E. DINNEEN ARCHITECTS & PLANNERS, INC.
123 North Washington Street Boston, Massachusetts 02114-2143 tel 617 227 7727 fax 617 227 1870

TITLE:
RIGHT OF FIRST OFFER PREMISES
SECOND FLOOR PLAN

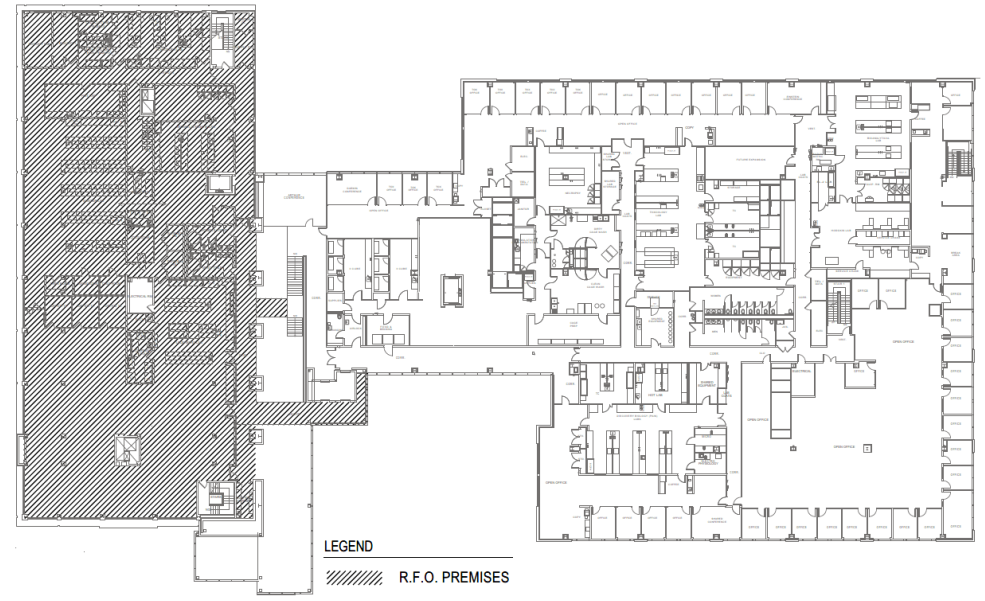
PROJECT NO. : 17185
ISSUE DATE : 11/16/17
SCALE : NTS
DRAWN BY : MJO

1C-2

EXHIBIT 1C, SHEET 1

EXHIBIT 1C, SHEET 2

LEASE PLAN – RFO PREMISES (THIRD FLOOR)



PROJECT NAME
CONCERT PHARMACEUTICALS

65 HAYDEN AVE
LEXINGTON, MASSACHUSETTS

R.E. DINNEEN ARCHITECTS & PLANNERS, INC.
123 North Washington Street Boston, Massachusetts 02114-2143 tel 617 227 7727 fax 617 227 1870

TITLE:
RIGHT OF FIRST OFFER PREMISES
THIRD FLOOR PLAN

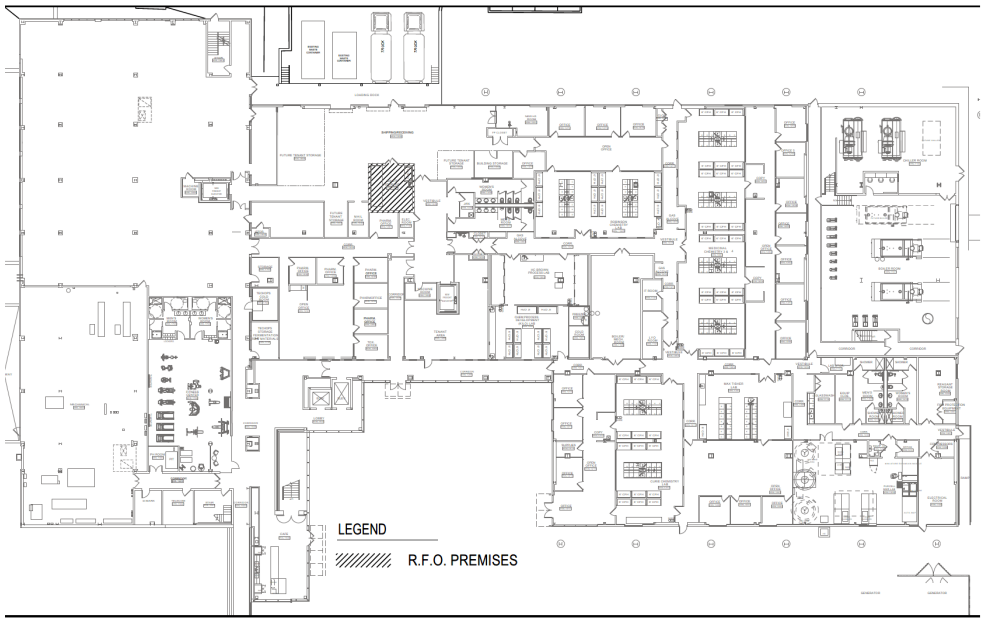
PROJECT NO. : 17185
ISSUE DATE : 11/16/17
SCALE : NTS
DRAWN BY : MJO

1C-1

EXHIBIT 1C, SHEET 2

EXHIBIT 1C, SHEET 3

LEASE PLAN – NON-HM STORAGE PREMISES



PROJECT NAME
CONCERT PHARMACEUTICALS

65 HAYDEN AVE
LEXINGTON, MASSACHUSETTS

R.E. DINNEEN ARCHITECTS & PLANNERS, INC.
123 North Washington Street Boston, Massachusetts 02114-2143 tel 617 227 7727 fax 617 227 1870

TITLE:
RIGHT OF FIRST OFFER H ROOM
FIRST FLOOR PLAN

PROJECT NO. : 17185
ISSUE DATE : 12/11/17
SCALE : NTS
DRAWN BY : MJO

1C-3

EXHIBIT 1C, SHEET 3

EXHIBIT 1D

LEASE PLAN – STROBIC FAN

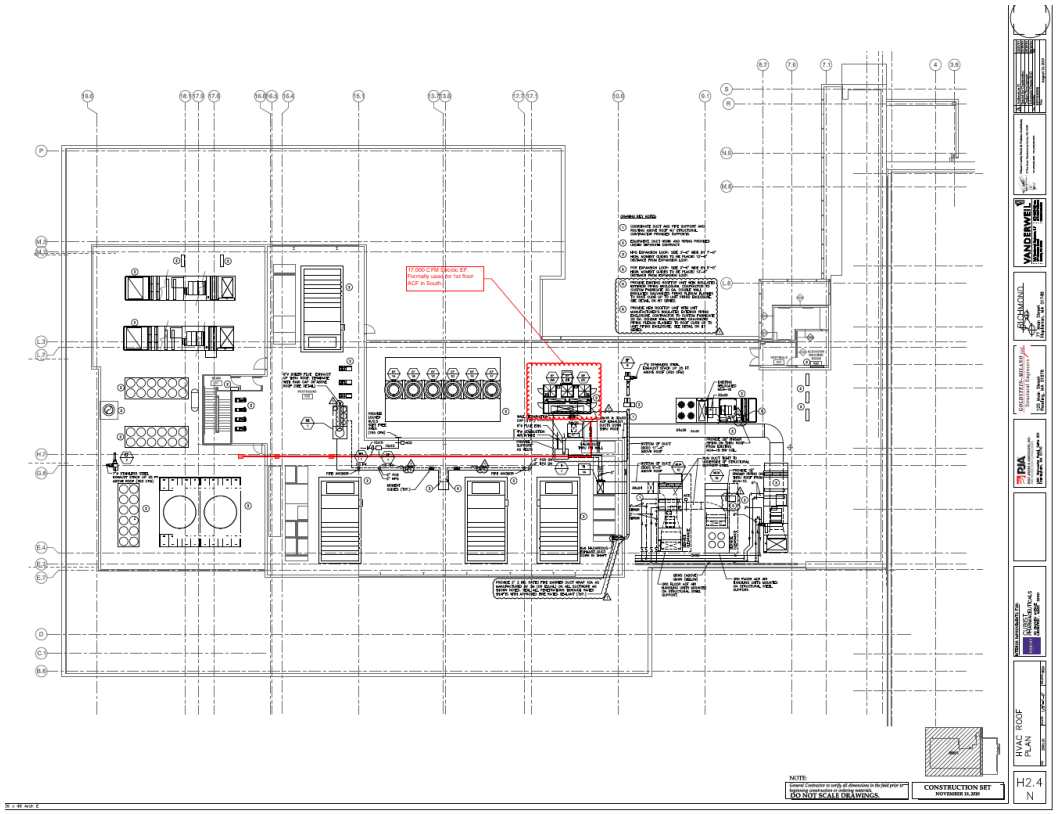


EXHIBIT 2

LEGAL DESCRIPTION - LAND

Real property in the Town of Lexington, County of Middlesex, Commonwealth of Massachusetts, described as follows:

Parcel One (45 & 55 Hayden Avenue):

A certain parcel of land in the Commonwealth of Massachusetts, County of Middlesex, Town of Lexington, and shown as Lot 2 on a plan entitled "**Plan of Land in Lexington, Mass. (Middlesex County)**," dated March 27, 1998, recorded October 6, 1998, with Middlesex South Registry of Deeds as Plan No. 1088 of 1998 in Book 29190, Page 447, prepared by Beals and Thomas, Inc., more particularly bounded and described as follows:

Beginning at the most southwesterly corner of the premises, at the southeasterly corner of Lot 1 as shown on said plan, then running:

N 02° 20' 56" E 180.68 feet to a point, thence turning and running;

N 87° 39" 04" W 40.00 feet to a point, thence turning and running;

N 02° 20' 56" E 122.19 feet to a point, thence turning and running;

N 87° 39' 04" E 40.00 feet to a point, thence turning and running;

N 02° 20' 56" E 547.13 feet to a point, thence turning and running, said last five courses being bounded by Lot 1, as shown on said plan, thence turning and running;

S 87° 36' 20" E 1,330.04 feet to a point of curvature, thence running;

Northeasterly to a curve to the left having a radius of 135.00 feet and a length of 58.90 feet to a point of tangency, thence running;

N 67° 23' 52" E 146.89 feet to a point, thence turning and running;

S 03° 52' 06" E 111.25 feet to a point, said last four courses being bounded by land now or formerly of the Town of Lexington, thence turning and running;

S 44° 07' 54 W 561.19 feet to a point, thence turning and running;

S 22° 29' 38" E 435.76 feet to a point, said last two courses are bounded in part by land now or formerly the Town of Lexington and, in part now or formerly of Hayden Office Trust, thence running;

Southwesterly by a curve to the right, having a radius of 985.00 feet and a length of 12.11 feet to a point of tangency, thence turning and running;

N 87° 36’ 20” W 1,329.27 feet to the point of beginning, said last two courses being bounded by the northerly sideline of Hayden Avenue.

Containing 1,123,722 square feet more or less, or 25.797 acres, more or less.

A portion of said Lot 2 is registered land, described as follows:

Lot 293 on Land Court Plan 19485 N as approved by the Land Court and filed in the Land Registration Office; and

Lots 10 and 11 on Land Court Plan 16660 O as approved by the Land Court and filed with the Land Registration Office.

Parcel Two (Appurtenant Easements - 45 & 55 Hayden Avenue):

A. There is appurtenant to the above described Lot 11 the right and easement to use the drainage ditch running from west to east across the northerly portion of Lot 10, shown on said plan, as set forth in Registered Document No. 517903.

B. There is appurtenant to the above described Lot 11 rights and easements for sewer purposes as set forth in Registered Document No. 479201.

C. There is appurtenant to said Lot 293 the benefits of the agreement and reservation as to trunk sewer more particularly set forth in deed filed as Document No. 479738.

D. Lot 10 has the benefit of a reservation in the strip of land marked sewer easement as shown on said plan, set forth in Document 517903 and the rights and easements for sewer purposes as set forth in Registered Document No. 479201, insofar as applicable.

E. Together with the benefit of the appurtenant easements over Lot B shown on plan entitled “A Compiled Plan of Land in Lexington, Mass.” Dated August 27, 1970, by John J. McSweeney, recorded with Middlesex South District Deeds in Book 11928, Page 614, as shown on said plan, as reserved in a taking by the Town of Lexington dated November 30, 1970, recorded with said Deeds in Book 11928, Page 611, and in a deed from George H. Crawford to the Town of Lexington of the said Lot B dated December 7, 1970, recorded with said Deeds in Book 11928, Page 614.

F. Together with the benefit of the appurtenant easements set forth in Declaration of Covenants and Easements dated September 18, 1998 filed as Document No. 1084070 and recorded in Book 29287, Page 189; as affected by Amended and Restated Declaration of Covenants and Easements dated November 8, 1999, filed as Document No. 1123738, and recorded in Book 30855, Page 323; as affected by First Amendment to Amended and Restated Declaration of Covenants and Easements dated March 26, 2002, filed as Document No. 1261521, recorded in Book 37256, Page 364.

Parcel Three (65 Hayden Avenue):

That certain parcel of land situate in Lexington in the County of Middlesex and Commonwealth of Massachusetts shown as Lot 292 on Land Court Plan No. 19485-N.

All of said boundaries are determined by the Court to be located as shown on a subdivision plan, as approved by the Court, filed in the Land Registration Office, a copy of which is filed in the Registry of Deeds for the South Registry District of Middlesex County in Registration Book 1178 Page 11.

Parcel Four (Appurtenant Easements - 65 Hayden Avenue):

There is appurtenant to said Lot 292 the right to use the whole of Grassland Street and Valleyfield Street as shown on the plan Registered in the Registration Book 383 Page 149 in common with others entitled thereto; the right to use all streets or roads as shown on the plan Registered in Registration Book 506 Page 153, in common with all others legally entitled thereto; the benefit of the agreement and reservation as to trunk sewer more particularly set forth in the deed Registered as Document No. 479738; and the benefit of the appurtenant easements set forth in Declaration of Covenants and Easements dated September 18, 1998 filed as Document No. 1084070 and recorded in Book 29287, Page 189; as affected by Amended and Restated Declaration of Covenants and Easements dated November 8, 1999, filed as Document No. 1123738, and recorded in Book 30855, Page 323; as affected by First Amendment to Amended and Restated Declaration of Covenants and Easements dated March 26, 2002, filed as Document No. 1261521, recorded in Book 37256, Page 364

EXHIBIT 3

PLAN –NITROGEN PREMISES

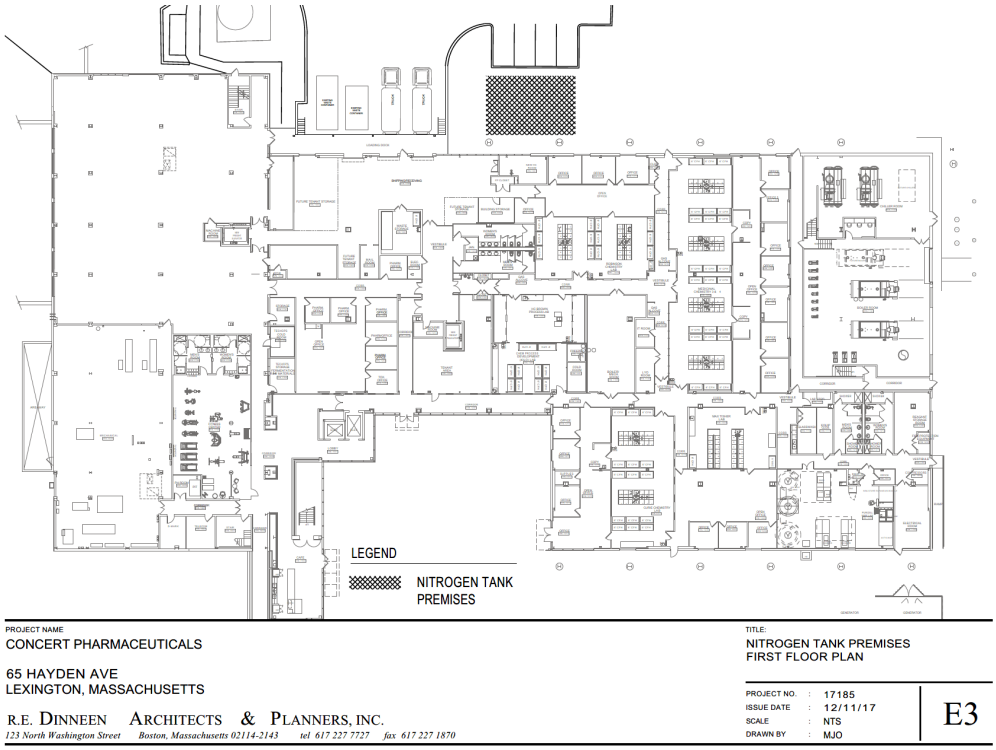


EXHIBIT 4

WORK LETTER

This Exhibit is attached to and made a part of the Lease (the "**Lease**") by and between **HCP/KING HAYDEN CAMPUS LLC**, a Delaware limited liability company ("**Landlord**"), and **CONCERT PHARMACEUTICALS, INC**., a Delaware corporation ("**Tenant**"), for space located at 65 Hayden Avenue, Lexington, Massachusetts. Capitalized terms used but not defined herein shall have the meanings given in the Lease.

I. LANDLORD'S WORK

1. Definitions. This Work Letter shall set forth the obligations of Landlord and Tenant with respect to the improvements to be performed in the Premises for Tenant's use. For the purposes of this Lease, "**Landlord's Work**" consists of: (i) Tenant Improvement Work described on Exhibit 4-1 ("**Preliminary Space Plan**"), (ii) the equipment list ("**Equipment List**") attached hereto as Exhibit 4-2, and (iii) the responsibilities of Landlord as set forth in the Landlord/Tenant Responsibility Matrix attached hereto as Exhibit 4-3. The Preliminary Plan, Equipment List, and the Landlord/Tenant Responsibility Matrix are referred to herein collectively as the "**Preliminary Plans**". In the event of any conflict between Exhibit 4-3 and either Exhibit 4-1 or Exhibit 4-2, Exhibit 4-3 shall control. Landlord and Tenant acknowledge that the Construction Documents have not yet been prepared and, therefore, it is impossible to determine the exact cost of the Landlord's Work at this time. Accordingly, Landlord and Tenant agree that Landlord's obligation to pay for the Cost of Landlord's Work, as hereinafter defined shall be limited to an amount ("**Landlord's Contribution**") which shall not exceed $4,996,980.00 (i.e., $90.00 per rentable square foot of the Premises) (the "**Maximum Amount**") and that Tenant shall be responsible for the Cost of Landlord's Work to the extent that it exceeds the Maximum Amount. The "**Cost of Landlord's Work**" shall be defined as all costs ("**Hard Costs**") incurred by Landlord relating to the performance of the Landlord's Work (including, without limitation, the cost of obtaining permits and any applicable state sales and use taxes) and all soft costs ("**Soft Costs**") including, without limitation, architectural, engineering, and data/telecom cabling costs, incurred in connection with the Landlord's Work (including, without limitation, the cost of preparing Construction Documents). Landlord will charge Tenant a construction management fee equal to four percent (4%) of the Cost of Landlord's Work, which shall be paid from Landlord's Contribution as the Cost of Landlord's Work is incurred.

2. Design-Build Contractor; GMP. Landlord shall enter into a design-build contract ("**Design-Build Contract**") for the Landlord's Work with BW Kennedy ("**Design-Build Contractor**"). Landlord shall require the Design-Build Contractor to (a) name Tenant as an additional insured party on Design-Build Contractor's liability insurance policies and (b) add Tenant to the indemnification protection that the Design-Build Contractor agrees to provide to Landlord in the Design-Build Contract. The Design-Build Contract shall be on the basis of a guaranteed maximum price ("**GMP**"). The GMP shall be determined based upon the sum of the following:

• Design-Build Contractor's Fee: 2.5% of the sum ("**Cost of the Work**") of: (i) Direct Cost of the Work, and (ii) General Conditions Costs.

• General Conditions Costs: 5% of the Direct Cost of the Work

• Direct Cost of the Work: Determined by bids obtained from subcontractors in accordance with Section 5 below.

• Design-Builder's Contingency: 5% of the Hard Cost of the Work.

3. Preparation of Construction Documents. Landlord shall engage R.E. Dineen to prepare the architectural plans and specifications describing Landlord's Work. The Design-Build Contractor shall engage each Design-Build Subcontractor, as hereinafter defined, to prepare the engineering plans and specifications applicable to the portions of Landlord's Work to be performed by such Design-Build Subcontractor. The foregoing architectural and engineering plans and specifications are referred to collectively herein as the "**Construction Documents**". The Construction Documents shall be consistent, in all material respects, with the Preliminary Plans and shall be subject to Tenant's written approval, which approval shall not be unreasonably withheld, conditioned, or delayed.

4. Tenant Responses. Tenant shall respond, in writing, to any requests from Landlord or the Design-Build Contractor for information, consents, or authorizations to proceed, within three (3) business days of Tenant's receipt of such request. Any failure by Tenant to respond within such time period may be the basis of a Tenant Delay. Tenant shall have the right to hire a Tenant Construction Representative to oversee all required construction relative to the Tenant Premises.

5. Bid Process. Tenant hereby acknowledges that:

(i) the Design-Build Contractor will not bid the following portions of Landlord's Work (which portions will be performed by designated subcontractors ("**Designated Subcontractors**")). Therefore, bids will only be obtained from the Designated Subcontractors for such elements of Landlord's Work:

- Mechanical/HVAC: Environmental Systems, Inc.
- Electrical: Nappa Electric, Inc. The scope of the work of Nappa Electric may, at Landlord's election, include installation of low voltage structural cabling
- Plumbing: North Shore Mechanical Contractors, Inc.
- Fire Protection: Legacy Fire Protection, Inc.

(ii) Landlord will cause the Design-Builder to use reasonable efforts to obtain at least two (2) bidders for other portions of Landlord's Work.

All bidders shall be reasonably acceptable to both Landlord and Tenant (Tenant hereby confirming and agreeing that the Designated Subcontractors are acceptable to Tenant). Tenant shall have the right to review all bids within four (4) business days after receipt thereof. Landlord agrees to select the lowest bid unless Landlord has a reasonable basis for selecting a different bid.

If Tenant reasonably determines that the GMP is higher than is acceptable to Tenant, then Tenant shall have a one-time right to give request scope changes to Landlord's Work prior to the commencement of Landlord's Work, as herein set forth in this paragraph. In order to exercise such one-time right to request changes to Landlord's Work in order to reduce the GMP, Tenant shall, on or before the date four (4) business days after Tenant receives Landlord's notice to Tenant of the GMP, give written notice to Landlord specifying the changes in Landlord's Work requested by Tenant. Such changes shall be subject to Landlord's prior written approval (which approval shall not be unreasonably withheld, conditioned, or delayed). Based upon the revised Construction Documents for Landlord's Work, which are based upon the changes requested by Tenant, as approved by Landlord, as aforesaid, the Design Build Contractor shall revise the GMP for the construction of Landlord's Work in accordance with this Section 5. Tenant shall have the right to review the revised GMP within four (4) business days after receipt thereof. Landlord agrees to select the lowest bid for any portion of Landlord's Work unless Landlord has a reasonable basis for selecting a different bid.

6. Tenant's Share. For the purposes of this Exhibit 4: (i) if the Cost of Landlord's Work is equal to, or less than, the Maximum Amount, then "**Tenant's Share**" shall be 0%, and (ii) if the Cost of Landlord's Work is greater than the Maximum Amount, then Tenant's Share shall be a fraction, the numerator of which is the amount by which the total Cost of Landlord's Work exceeds the Maximum Amount and the denominator of which is the total Cost of Landlord's Work.

7. Tenant's Obligation to Pay. If the Cost of Landlord's Work exceeds the Maximum Amount, Tenant shall pay to Landlord such Excess Costs as follows: (i) Tenant shall pay Tenant's Share of Tenant Improvement Costs within thirty (30) days of Billing, as hereinafter defined, (ii) with respect to any Changes to Landlord's Work, Tenant shall pay for the cost of such changes in accordance with Section 8 below, and (iii) with respect to any increases in the Cost of Landlord's Work arising from Claims by the Contractor, Tenant shall pay for the cost of such Claims as set forth in Section 9 below. "**Billing**" shall be defined as any invoice from Landlord setting forth, reasonable detail, the amount due from Tenant, and shall include invoices from vendors and service providers, and applications for payment from the Design-Build Contractor for work completed through the date of Billing, as certified by the Design-Build Contractor. Billing may not be submitted to Tenant more than one time per calendar month. The amounts payable by Tenant hereunder constitute Rent payable pursuant to the Lease, and the failure to timely pay same constitutes an Event of Default under the Lease.

8. Changes. If Tenant shall request any change, addition or alteration in any of the Plans after approval by Landlord ("**Changes**"), Landlord shall have such revisions to the drawings prepared. Promptly upon completion of the revisions, Landlord shall notify Tenant in

writing of the increased cost, if any, which will be chargeable to Tenant by reason of such change, addition or deletion. Tenant, within four (4) business days, shall notify Landlord in writing whether it desires to proceed with such Change. In the absence of such written authorization, Landlord shall have the option to continue work on the Premises disregarding the requested Change. To the extent that the cost of performing such revisions cause the Cost of Landlord's Work to exceed the Maximum Amount, Tenant shall reimburse Landlord for the Cost of Landlord's Work associated with such Changes within thirty (30) days of upon Billing, as such Change Work is being performed.

9. Claims. To the extent that any claims ("**Claims**") by the Design-Build Contractor cause the Cost of Landlord's Work to exceed the Maximum Amount, Tenant shall pay for such excess within thirty (30) days of Billing. Claims shall include any amounts properly due to the Contractor under the Design-Build Contract based upon the claims of the Design-Build Contractor under the Design-Build Contract, provided however, that the Claims shall not include any amounts arising from the default or negligence of Landlord, or Landlord's agents or employees, under the Design-Build Contract.

10. Performance of Landlord's Work; Landlord's Work.

(a) Landlord's Warranty. Following approval of the Construction Documents and Tenant's written authorization to proceed with Landlord's Work, Landlord shall cause the Landlord's Work to be performed in a diligent manner. Landlord hereby warrants and represents to Tenant that Landlord's Work shall be performed: (i) in a good and workmanlike manner; (ii) in all material respects, in accordance with the Construction Documents, and (iii) in accordance with all applicable Legal Requirements. The Landlord warranty and representations set forth in this Section 10(a) are referred to herein as "**Landlord's Warranty**".

(b) Tenant's Remedies in the Event of Breach of Landlord's Warranty. If, on or before the Warranty Expiration Date, Tenant gives Landlord written notice of any breach of Landlord's Warranty promptly after Tenant becomes aware of such breach, Landlord shall, at no cost to Tenant, correct or repair such breach as soon as conditions reasonably permit and as to which, in either case, Tenant shall have given notice to Landlord, as aforesaid. The "Warranty Expiration Date" shall be defined as the date eleven (11) months and two (2) weeks after the Term Commencement Date. Except to the extent to which Tenant shall have given Landlord notice of respects in which Landlord has breached Landlord's Warranty or Landlord has otherwise failed to perform Landlord's construction obligations under this Exhibit 4, Tenant shall be deemed conclusively to have: (i) approved Landlord Work, (ii) waived any claim that Landlord has breached Landlord's Warranty, and (iii) have agreed that Tenant has no claim that Landlord has failed to perform any of Landlord's obligations under this Work Agreement. The provisions of this Section 10(a) sets forth the Tenant's sole remedies for any breach of the Landlord's Warranty; however nothing in this Section 10(a) shall be deemed to relieve the Landlord of its responsibilities to perform maintenance and repairs as required pursuant to Section 10.1 of the Lease or affect or limit the provisions of Section 10.7 of the Lease. With respect to any latent defects in Landlord's Work discovered by Tenant after the Warranty Expiration Date, Landlord shall, upon request of Tenant, assign to Tenant its rights against any

contractor, subcontractor, and/or designer engaged by Landlord in connection with Landlord Work to the extent necessary to enable Tenant to assert claims against such contractor, subcontractor and/or designer in connection with such latent defect.

11. Limitations on Application of Landlord's Contribution. Except as set forth in this Section 11, any portion of Landlord's Contribution which exceeds the Cost of the Landlord's Work shall accrue to the sole benefit of Landlord, it being agreed that Tenant shall not be entitled to any credit, offset, abatement or payment with respect thereto. Notwithstanding the foregoing (i) no more than $138,805.00 of Landlord's Contribution (i.e., $2.50 per rentable square foot of the Premises) may be used by Tenant for any move-related expenses, including the purchase and installation of furniture, fixtures and equipment, and (ii) no portion of Landlord's Contribution may be applied by Tenant towards the payment of Rent.

12. Landlord's Test Fit Plan Contribution. In addition to providing Landlord's Contribution, Landlord shall provide $4,441.76 (i.e., $.08 per rentable square foot of the Premises) ("**Landlord's Test Fit Plan Contribution**") towards the cost of the test fit plan prepared by Tenant's architect.

13. Miscellaneous

(a) Tenant's Authorized Representative. Tenant designates Sandra Morales ("**Tenant's Representative**") as the only person authorized to act for Tenant pursuant to this Work Letter. Landlord shall not be obligated to respond to or act upon any request, approval, inquiry or other communication ("**Communication**") from or on behalf of Tenant in connection with this Work Letter unless such Communication is in writing from Tenant's Representative. Tenant may change either Tenant's Representative at any time upon not less than three (3) business days advance written notice to Landlord.

(b) Landlord's Authorized Representative. Landlord designates Robert Albro ("**Landlord's Representative**") as the only person authorized to act for Landlord pursuant to this Work Letter. Tenant shall not be obligated to respond to or act upon any request, approval, inquiry or other Communication from or on behalf of Landlord in connection with this Work Letter unless such Communication is in writing from Landlord's Representative. Landlord may change either Landlord's Representative at any time upon not less than three (3) business days advance written notice to Tenant.

(c) Tenant shall have the right, during the performance of Landlord's Work, to have Tenant's Representative and Tenant's other representatives participate in weekly construction meetings with Landlord and the Design-Build Contractor as to the status of the performance of Landlord's Work.

(d) Tenant shall have access to the Premises prior to the Commencement Date in accordance with the provisions of Section 1.6 of the Lease.

14. Disputes.

Any disputes relating to provisions or obligations in this Lease in connection with the Landlord's Work or this Exhibit 4 shall be submitted to arbitration in accordance with the provisions of applicable state law, as from time to time amended. Arbitration proceedings, including the selection of an arbitrator, shall be conducted pursuant to the rules, regulations and procedures from time to time in effect as promulgated by the American Arbitration Association. Notwithstanding the foregoing, the parties hereby agree that the arbitrator for any disputes relating to Landlord's Work shall be a construction consultant experienced in the construction of office/laboratory buildings in the cities of Boston and Cambridge, as mutually agreed upon by the parties, or, if not then designated by the parties, within ten (10) days after either party makes a request for arbitration hereunder, or (if the parties do not mutually agree upon such arbitrator) as designated by the Boston office of the American Arbitration Association upon request by either party. Prior written notice of application by either party for arbitration shall be given to the other at least ten (10) days before submission of the application to the said Association's office in Boston, Massachusetts. The arbitrator shall hear the parties and their evidence. The decision of the arbitrator shall be binding and conclusive, and judgment upon the award or decision of the arbitrator may be entered in the appropriate court of law; and the parties consent to the jurisdiction of such court and further agree that any process or notice of motion or other application to the Court or a Judge thereof may be served outside the Commonwealth of Massachusetts by registered mail or by personal service, provided a reasonable time for appearance is allowed. The costs and expenses of each arbitration hereunder and their apportionment between the parties shall be determined by the arbitrator in his award or decision. Except where a specified period is referenced in this Lease, no arbitrable dispute shall be deemed to have arisen under this Lease prior to the expiration of the period of twenty (20) days after the date of the giving of written notice by the party asserting the existence of the dispute together with a description thereof sufficient for an understanding thereof. In connection with the foregoing, it is expressly understood and agreed that the parties shall continue to perform their respective obligations under the Lease during the pendency of any such arbitration proceeding hereunder (with any adjustments or reallocations to be made on account of such continued performance as determined by the arbitrator in his or her award).

II. TENANT'S WORK

Tenant, at Tenant's sole cost and expense (subject to Tenant's right to apply Landlord's Contribution towards such costs, as set forth in Section 11 of Part I of this Exhibit 4), shall be responsible for the purchase, installation, and maintenance of Tenant's laboratory specific systems, including, without limitation, the Acid Neutralization Tank, and the Nitrogen Tank.

III. MISCELLANEOUS.

This Exhibit shall not be deemed applicable to any additional space added to the Premises at any time or from time to time, whether by any options under the Lease or otherwise, or to any portion of the original Premises or any additions to the Premises in the event of a renewal or extension of the original Term of the Lease, whether by any options under the Lease or

otherwise, unless expressly so provided in the Lease or any amendment or supplement to the Lease.

EXHIBIT 4-2

TENANT'S EQUIPMENT LIST

[See attached.]

Concert Pharmaceuticals
65 Hayden Ave, 3rd Floor
Lexington, MA

Equipment Utility Matrix - Final for Budget

December 13, 2017

		Existing to	Relocated from	New	Future	GENERAL DESCRIPTION	EQUIPMENT DETAILS		STATUS		PHYSICAL					PLUMBING / PIPING																HVAC REQUIREMENTS				ELECTRICAL REQUIREMENTS																	
Equipment ID #	Existing Location @ 99 Hayden					ROOM AND EQUIPMENT NAMES 65 HAYDEN	MODEL NUMBER	SERIAL NUMBER	SUPPLIED	INSTALLED	QUANTITY	Width	Depth	Height	Image #	COMPRESSED	VACUUM (VAC)	CARBON	NITROGEN (N2)	SPECIALITY	Zero air	Hydrogen	Helium	PROCESS	DOMESTIC	DOMESTIC HOT	PROTECTED	PROTECTED	TEMPERED	D.I. WATER	SANITARY	SPECIAL	TEMP REQMTS (CA/HA)	HUMIDITY REQMT	CLEAN RM REQMTS	EXHAUST (CFM)	VOLTS	PHASE	AMPS	WATTS (kw)	STAND BY PWR	UPS	CLASS 1, DIV 2	ALARM POINT	DATA / WIFI	TELEPHONE	Internet or WiFi	SECURITY ACCESS	PROCESS MANUFACTURI	COMMENTS
						ANALYTICAL LAB																																													
						Casework																																													
						Sink (Epoxy) w/ Eyewash																					x	x		x		x																			
						Fume Hoods																																													
						Spot Exhaust																																													
1				1		8' Fume Hood					1					x	x		x																									X						
2			1			6' Fume Hood					1					x	x		x																															
						Floor Mounted (Equipment Zone)																																													
3	Chemistry			1		Fridge/Freezer					1	32	32	60																							120	1	1.5												Do no relocate. Purchase new explosion proof
5					1	ES2000 CL-BT light stability chamber					1	41	35	53																																					representative model
6	Chemistry		8			Mobile benches (HPLCs and GCs)						43.5	19	67																																					Makes sense to divide these benches between all the labs as needed
						Bench Top Equipment																																													
7	Dungeon		1			831 KF Coulometer (oven)					1	32	32	22																						yes	120	1		200					X					6 pieces all held within a dim
8	Chemistry		1			TA Q2000 MDSC w/ Autosampler					1	20	23	20					x																															requires CPU and Heat Exchanger CPU 22x22x20 HE 11x21x11 shares CPU with Q500
9	Chemistry		1			TGA Q500 Auto Hi-Res MTGA and Ac					1	19	23	24					x																	yes	120	1		1400					X					requires CPU and Heat Exchanger sits on granite slab HE 6.5x16x6.5
10	Chemistry		1			Benchtop Temp/Humidity Chamber, 4 cu. ft.					1	32	34	45.5																			x	td			115	1	14			x								sits on sink counter
11	Chemistry		1			Moisture Analyzer HC 103					1	13	16	7																					yes	120	1	4											sits inside fumehood
12	Chemistry		1			Hydrogen Generator					1	13	18.5	17.5																							120	1		180										Hydrogen cylinder sits on floor in storage
13	Dungeon		1			Controlled Environment Chamber					1	54	27	37																							120	1	?											water contain on shelf above 11x20x9
14	Dungeon		1			Varian Dissolution System, VK 7000. D.					1	64	28	41																							120	1	2											3 pieces, sits on table bench, bench dimensions
15	Dungeon		1			Mastersizer 3000 w vacuum					1	24	28	20		x																					24	1		200					X					Pump Below 4 pieces plus CPU , vacuum is 13x13x30 shares computer with Nick Ronson
16	Dungeon		1			Wrist Action Shaker					1	50	17	16																							115	1	3.6											
17						Sonicator (e.g. Branson ultrasonic bath CPX-952-118R) (x1 new)						1	13	13	11.5																									115	1	2											
18	Dungeon		1			SensIR 3200 Bathless Disintegration System, 2 Pos, 115V						13	18	29																									120	1	6											
19					2	Milli-Q Reference Water Purification System						16	18	28																																						
20	Chemistry		1	1		Vacuum oven for samples					2																									yes	115	1	10											
21	Chemistry		1			Glassware oven (Brett's bench)					1																										115	1	9											
22				2		Toploading Balance (x2 new)					2	11	12	11																							12	1		6										
23				2		Analytical balances (x2 new)					2	12	20	12																							12	1	2.25											sits on granite block .20 x 13 x 2, balancer in enclosure
24				2		Powder enclosure						31	25	49																																		
						Chromatography																																												
25	Chemistry		1			GC-MS (Agilent 7890A + 7683B + 5975C)					1	35	26	35							x	x	x													yes							X			X					all three components, has CPU and pump, also attached unit C1888 19x25x22
						7890A																															120	1		2250										
						7683B																															120	1		700										
						5975C																															120	1		750										
26					1	NEW- GC-MS (like Agilent 7890A + 7683B + 5975C)					1	35	26	35							x	x	x													yes						X					x			Could share CPU with existing GC-MS
27	Chemistry		1			Adrian Below Agilent 1290					1	16	18	40																																	X				shares CPU with other HPLC Cobain. May need own cpu
						DEGRASSER																															120	1		30										
						BIN PUMP																															120	1		220										
						HIPALS																															120	1		300										
						TCC																															120	1		320										
						DAD																															120	1		160										
						PC																															120	1	4						X					
29	Dungeon		1			George Harrison Agilent 1100					1	16	18	47																																	X				shares CPU with Waters. May need own cpu
						DEGRASSER																															120	1		30										
						BIN PUMP																															120	1		220										
						DAD																															120	1		160										
						COLCOMP																															120	1		320										
						ALS																															120	1		300										
						ALS THERM																															120	1		260										
						PC																															120	1	4						X					
30	Dungeon		1			Roger Waters Agilent 1200 + Thermo CAD					1	34	18	39					x																											X				Shares CPU with Harrison. May need own cpu
						DEGRASSER																															120	1		30										
						QUAT PUMP																															120	1		160										
						ALS																															120	1		300										

Concert Pharmaceuticals
65 Hayden Ave, 3rd Floor
Lexington, MA

Equipment Utility Matrix - Final for Budget

December 13, 2017

Equipment ID #	Existing Location @ 99 Hayden	Existing to Relocated from	New	Future	GENERAL DESCRIPTION ROOM AND EQUIPMENT NAMES 65 HAYDEN	EQUIPMENT DETAILS MODEL NUMBER	 SERIAL NUMBER	STATUS SUPPLIED	 INSTALLED	PHYSICAL QUANTITY	 Width	 Depth	 Height	 Image #	PLUMBING / PIPING COMPRESSED	 VACUUM (VAC)	 CARBON	 NITROGEN (N2)	 SPECIALITY	 Zero air	 Hydrogen	 Helium	 PROCESS	 DOMESTIC	 DOMESTIC HOT	 WATER CO-O	 PROTECTED	 TEMPERED	 D.I. WATER	 SANITARY	 SPECIAL	HVAC REQUIREMENTS TEMP REQM'TS (CO/deg)	 HUMIDITY REQMT	 CLEAN RM REQMTS	 EXHAUST (CFM)	ELECTRICAL REQUIREMENTS VOLTS	 PHASE	 AMPS	 WATTS (kw)	 STAND BY PWR	 UPS	 CLASS 1, DIV 2	 ALARM POINT	 DATA / WIFI	 TELEPHONE	 Internet or WiFii	 SECURITY ACCESS	 PROCESS MANUFACTURI	COMMENTS
					TCC																														120	1		320												
					DAD																														120	1		160												
					THERMO CAD																														120	1		250												
					INTERFACE																														120	1		25												
31	Chemistry		1		Rory Gallagher Agilent 1100					1	16	18	54																																	X			shares CPU with Townsend. May need own cpu
					DEGRASSER																														120	1		30												
					BIN PUMP																														120	1		220												
					ALS																														120	1		300												
					TCC																														120	1		320												
					ALS THERM																														120	1		260												
					COLCOMP																														120	1		320												
					DAD																														120	1		160												
					PC																														120	1	4						X					
32	Chemistry		1		Janis Joplin Agilent 1200					1	16	18	41																																	X			Shares CPU with Hendrix. May need own cpu
					DEGRASSER																														120	1		30												
					QUAT PUMP																														120	1		180												
					DAD																														120	1		160												
					TCC																														120	1		320												
					ALS																														120	1		300												
					FC/ALS THERM																														120	1		260												
					PC																														120	1	4						X					
33	Chemistry		1		Jimi Hendrix Agilent 1200					1	16	18	44																																	X			Shares CPU with Joplin. May need own cpu.
					DEGRASSER																														120	1		30												
					QUAT PUMP																														120	1		180												
					DAD																														120	1		160												
					TCC																														120	1		320												
					ALS																														120	1		300												
					FC/ALS THERM																														120	1		260												
34	Dungeon		1		Agilent 1100 Series Mick Ronson					1	16	18	46																																	X			Has own cpu.
					DEGRASSER																														120	1		30												
					BIN PUMP																														120	1		220												
					ALS																														120	1		300												
					TCC																														120	1		320												
					ALS THERM																														120	1		260												
					COLCOMP																														120	1		320												
					DAD																														120	1		160												
					PC																														120	1	4						X					
35				2	New HPLC (Agilent 1260 equivalent)					2	16	18	40																																							
36	Chemistry		1		GC-02 (Agilent 7890B + 7693 + 7697A)					1	40.5	22	37								x	x	x															yes												Will need own CPU until future GC. Two pieces connected by hose 7697A 20.5x26.5x31.5
					7890B																												120	1		2250												
					7693																												120	1		700												
					7697A																												120	1		750												
40	Chemistry		1		LC-QTOF (Agilent 1290 + Agilent 6230 QTOF)					1	72	28	52						x																		yes						X			X			Own CPU
																																	(2) 208	1		210												
																																	120	1		350												
																																	120	1		150												
																																	120	1		110												
					PC																														120	1	4						X					
					Misc. Supplies / Storage																																															
37	Chemistry		2	1	Glassware Cabinet					3	48	22	84																																							
38			1		Flammable solvent cabinet					1	43.5	19	67																																							
39				2	Corrosive cabinets					2																																									Under hoods as in existing facility. Can be relocated if acceptable.
					Formulation Room 1																																														
1	Kilo Lab		1		High-Shear Granulator (ProCept MiPro w ss cabinet)					1	43	26	80																																							
2	Par room		1		Roller compactor (Vector TFC-Lab Micro)					1	24	14	23																										yes			120	1		250								
3	Dungeon		1		Comil (Quadro U5)					1	27	16	22																										yes			115	1		375								
4	Par room		1		Sieve Shaker (AS 200)					1	16	14	33																										yes			120	1	2									
5	Par room		1		Turbula Shaker/Mixer (WAB # T2F)					1	19	24	16																													120	1		1600								

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						GENERAL DESCRIPTION	EQUIPMENT DETAILS		STATUS		PHYSICAL					PLUMBING / PIPING																	HVAC REQUIREMENTS				ELECTRICAL REQUIREMENTS													
Equipment ID #	Existing Location @ 99 Hayden	Existing to	Relocated from	New	Future	ROOM AND EQUIPMENT NAMES 65 HAYDEN	MODEL NUMBER	SERIAL NUMBER	SUPPLIED	INSTALLED	QUANTITY	Width	Depth	Height	Image #	COMPRESSED	VACUUM (VAC)	CARBON	NITROGEN (N2)	SPECIALITY	Zero air	Hydrogen	Helium	PROCESS	DOMESTIC	DOMESTIC HOT	PROTECTED	PROTECTED	TEMPERED	D.I. WATER	SANITARY	SPECIAL	TEMP REQM'TS (Celcius)	HUMIDITY REQMT	CLEAN RM REQMTS	EXHAUST (CFM)	VOLTS	PHASE	AMPS	WATTS (kw)	STAND BY PWR	UPS	CLASS 1, DIV 2	ALARM POINT	DATA / WIFI	TELEPHONE	Internet or WIFIi	SECURITY ACCESS	PROCESS MANUFACTURI	COMMENTS
6	Dungeon		1			Jet Mill (Glen Mills Jet-o-Mizer)					1	20	14	14					x																		120	1	5											
7	N/A			1		Powder Hood (HEPA filtered)					1	72	36	48																																				estimated dimensions
8	N/A			1		Top Loading Balance					1	11	12	11																																				inside powder hood
						Formulation Room 2																																												
1	Par room		1			Tablet Press (Riva Piccola 8-station)					1	25	28	69																						yes	220	1	0.34											will stay on rolling cart
2	Par room		1			Tablet Hardness Tester (Varian VK200)					1	11	10	6																							115	1	1.5											
3	Dungeon		1			Friabilator					1	14	16	19																							115	1		82										
4	Cage		1			Pan Coater (O'Hara LCBT)					1	28	24	63		x																					220	1	20											
5	Cage		1			Fette Tablet Deduster					1	18	36	48																							120	1	1											(230V coverted into 120V by manufacturer)
6	N/A			1		Analytical Balance					1	12	20	12																																				
7	Par Room		1			Movex, FF 50-115, AirVacuum					1	24	16	22																						yes	115	1		270										
						XRPD Lab																																												
1	Dungeon		1			Bruker FTIR Tensor 27 Spectrometer/Miracle ATR Unit						26	21	12					x																		24	1	3.75						X					Current shares CPU with microscope.
2	Dungeon		1			Bruker D2 Phaser XRD						29	23	24.5																							120	1	5											Needs designated Area for Xrays
3	Dungeon		1			AccuPyc II 1340 Auto Gas Pynometer						11	14	8									x														120	1		30										requires Helium
4	Dungeon		1			GeoPyc 1360 Automatic Envelope density analyzer					1	22	16	12																							120	1		95										
	Chemistry		2			Mobile benches (HPLCs and GCs)						43.5	19	67																																				Makes sense to divide these benches between all the labs as needed
						PROCESS/MED CHEMISTRY LAB																																												
						Casework																																												
		1		8		Sink (Epoxy) w/ Eyewash																																												
1				16		Flammable Storage Cabinet below Casework					16	50																																						under each FH. Likely need new ones
2				16		corrosive storage cabinets						24																																						located under each hood.
						Fume Hoods																																												
3						Spot Exhaust																																												
4						8' Fume Hood					16					x	2x		2x																										X					2 vacuum and 2 nitrogen per hood. 1 compressed air OK.
5		1				6' Fume Hood					1					x	x		x																		120	1	16											
						Floor Mounted																																												
6	Chemistry			1	1	Gas tank - argon (x2 new)					2																																							Free-standing large argon tanks strapped at hoods for med chem use
7	Cage		1		1	Flammable-appropriate full-size fridge for reagent storage (x1 new)					2	32	31	71																											X									
8	Cage		1		2	Flammable-appropriate full-size freezer for reagent storage (x1 new; -20 OK, -70 not needed)					3	32	31	71																											X									
9	Chemistry		4			Lab Chiller for Reactions					4	15	21	33																							115	1	14.4											
10					1	Lab Glove Box/Dry Box					1	72	48	60			X		X																		115	1							X					Nitrogen
11	Chemistry		1	1		Dry Ice on castors					2	28	20	31																																				
12	Chemistry		1			Dry Ice on castors					1	24	22	27																																				
						~~Chiller water loop with 2 outlets per hood~~																																												
						Bench Top Equipment																																												
13	Chemistry		12		4	Chiller for condensers (x4 new; similar to whatever Pharm Dev currently uses)					16	11	18	23																							115	1	16											Each med chemist needs his/her own
14	Chemistry		2		2	ISCO Combiflash purification system (x2 new)					4	15	18	36																						Yes	120	1	2						X					Can go in a spare Med Chem hood for immediate year or two; later if group grows to 4 ppl we will need to put on benchtop in exhausted enclosures
15	Chemistry		2	1	1	Toploading Balance inside powder enclosure					4	11	12	11																							12	1		6										
16	Chemistry		3		1	Analytical balances inside powder enclosure					4	12	20	12																							12	1	2.25											sits on granite block 20 x 13 x 2, balancer in enclosure
17	Chemistry		2	0	2	Powder enclosures (takes 2 balances)					4	31	25	49																						1 Exhaust	120	1	0.58											
18	Chemistry		4	5	5	Heidolph Benchtop Rotovap (with dry ice traps)					14	27	20	33																						Yes	115	1		110										Each med chemist needs his/her own. Preserve option to provide vac from either house vac or KNF diaphragm pump.
																																					115	1		5										
																																					115	1		1800										
				10	4	Computer terminal for ELN, etc																															115	1							X					
19	Chemistry				1	lyophilizer (x1 new)					1	26	26	26																							115	1												
20	Chemistry				1	KNF Laboport diaphragm pump for lyophilizer (x1 new)					1	7	13	9																							115	1												Will sit beside lyophilizer unit on a benchtop.
21	Chemistry		16	0	0	KNF Laboport diaphragm pumps for rotavaps (x4 new)					16	7	13	9																							115	1		280										Each med chemist needs his/her own. Would probably sit next to rotovap.
22	Chemistry		4	0	0	KNF Laboport diaphragm pumps for hood manifolds					12	7	13	9																							115	1	5.6											Each med chemist needs his/her own; would probably be in pump cabinet beneath hood
23	Chemistry		1		2	benchtop drying ovens for glassware, syringes/needles (x2 new)					3	22	8	11																							120	1	10											inside cabinet
24	Chemistry		2	1	1	benchtop vacuum oven					4	20	25	32			x		x																	~~yes~~	120	1	10											Sending one to analytical lab
25	Chemistry		1		2	benchtop drying oven for samples					3	21	20	33			x		x																		120	1	10											sending one to analytical lab

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Equipment ID #	Existing Location @ 99 Hayden	Existing to Relocated from	New	Future	GENERAL DESCRIPTION: ROOM AND EQUIPMENT NAMES 65 HAYDEN	EQUIPMENT DETAILS: MODEL NUMBER	SERIAL NUMBER	STATUS: SUPPLIED	INSTALLED	PHYSICAL: QUANTITY	Width	Depth	Height	Image #	PLUMBING / PIPING: COMPRESSED	VACUUM (VAC)	CARBON	NITROGEN (N2)	SPECIALITY	Zero air	Hydrogen	Helium	PROCESS	DOMESTIC	DOMESTIC HOT	PROCESS COLD	PROTECTED	TEMPERED	D.I. WATER	SANITARY	SPECIAL	HVAC REQUIREMENTS: TEMP REQMTS (COOL)	HUMIDITY REQMT	CLEAN RM REQMTS	EXHAUST (CFM)	ELECTRICAL REQUIREMENTS: VOLTS	PHASE	AMPS	WATTS (kw)	STAND BY PWR	UPS	CLASS 1, DIV 2	ALARM POINT	DATA / WIFI	TELEPHONE	Internet or WiFii	SECURITY ACCESS	PROCESS MANUFACTURI	COMMENTS
26				1	microwave reactor (e.g. Biotage Initiator+Robot8, part# 356001) (x1 new)					1	23	26	20		X																				120	1							X					Ideally will live in a Med Chem hood for immediate year or two; later if group grows to 4 ppl we will need to put on benchtop in exhausted enclosure
27	Chemistry	3	1	1	Bel-Art Dry-Keeper desiccator storage cabinet for glassware, syringes/needles (x2 new)					5	24	15	14																						120	1	10						X					existing model is sanpia
28	Chemistry	2		2	Bel-Art Dry-Keeper desiccator storage cabinet for chemicals (x2 new)					4	13	16.5	20.5																							120	1	10											existing model is secador
29	Chemistry	1		2	Sonicator (e.g. Branson ultrasonic bath CPX-952-118R) (x2 new)					3	13	13	11.5																							115	1	2											
30	Chemistry	3		1	EasyMax Synthesis Workstation (x1 new)					3																										115	1		1000										located in fume hood.
31	Chemistry	1			ReactIR					1	7	9	10																					115	1	6											
32	Chemistry		2		Milli-Q Reference Water Purification System						16	18	28																																				Plumb from DI water/ wall mounted? TBD
33	chemistry	1			Flow chemistry - Asia						16	18	24																							115	1	2											located in fume hood.
					Chromatography																																																	
34				1	New Agilent LC/MS (Single Quad w/ ELSD)					1	43	31	32					x																										x			X					ELSD needed. Could theoretically share CPU with existing LC/MS
35	Chemistry	1			Eric Clapton Agilent LC-MS Single Quad + ELSD					1	43	31	32					x																yes	208					X			X					requires CPU and waste storage under counter
					DEGRASSER																														120	1		30										
					BIN PUMP																															120	1		220										
					HIP ALS																															120	1		300										
					TCC																															120	1		320										
					DAD																															120	1		160										
					PC																															120	1	4						X					
36	Chemistry	1			Kurt Cobain Agilent 1200					1	23	18	36																																X					requires CPU and waste storage under counter
					DEGRASSER																														120	1		30										
					BIN PUMP																															120	1		220										
					ALS																															120	1		300										
					TCC																															120	1		320										
					DAD																															120	1		160										
					PC																															120	1	4						X					
37	Chemistry	1			Carlos Santana Agilent 1100					1	16	18	46																																X					requires CPU and waste storage under counter
					DEGRASSER																														120	1		30										
					QUAT PUMP																															120	1		180										
					COLCOMP																															120	1		320										
					ALS																															120	1		300										
					ALS THERM																															120	1		260										
					PC																															120	1	4						X					
38	Chemistry	1			Joe Strummer Agilent 1100					1	16	18	46																																X					requires CPU and waste storage under counter
					DEGRASSER																														120	1		30										
					QUAT PUMP																															120	1		180										
					DAD																															120	1		160										
					COLCOMP																															120	1		320										
					ALS																															120	1		300										
					ALS THERM																															120	1		260										
					PC																															120	1	4						X					
39	Chemistry	1			Pete Townsend Agilent 1200					1	16	18	39																																X					requires CPU and waste storage under counter
					DEGRASSER																														120	1		30										
					QUAT PUMP																														120	1		180										
					ALS																														120	1		300										
					TCC																														120	1		320										
					DAD																														120	1		160										
40	Chemistry	1			Jimmy Page Agilent 1200					1	16	18	41																																X					requires CPU and waste storage under counter
					DEGRASSER																														120	1		30										
					QUAT PUMP																														120	1		180										
					ALS																														120	1		300										
					TCC																														120	1		320										
					DAD																														120	1		160										
					PC																														120	1	4						X					
41	Chemistry	1			David Gilmour Agilent 1200					1	16	18	41																																								
					DEGRASSER																														120	1		30										
					QUAT PUMP																														120	1		180										
					ALS																														120	1		300										
					DAD																														120	1		160										

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Equipment ID #	Existing Location @ 99 Hayden	Existing to Remain	Relocated from	Relocated to New	Relocated to Future	GENERAL DESCRIPTION ROOM AND EQUIPMENT NAMES 65 HAYDEN	EQUIPMENT DETAILS MODEL NUMBER	EQUIPMENT DETAILS SERIAL NUMBER	STATUS SUPPLIED	STATUS INSTALLED	PHYSICAL QUANTITY	PHYSICAL Width	PHYSICAL Depth	PHYSICAL Height	PHYSICAL Image #	PLUMBING / PIPING COMPRESSED	VACUUM (VAC)	CARBON	NITROGEN (N2)	SPECIALITY	Zero air	Hydrogen	Helium	PROCESS	DOMESTIC	DOMESTIC HOT	PURIFIED	PROTECTED	TEMPERED	D.I. WATER	SANITARY	SPECIAL	HVAC REQUIRETS (CA/GAS)	HUMIDITY REQMT	CLEAN RM REQMTS	EXHAUST (CFM)	ELECTRICAL REQUIREMENTS VOLTS	PHASE	AMPS	WATTS (kw)	STAND BY PWR	UPS	CLASS I, DIV 2	ALARM POINT	DATA / WiFi	TELEPHONE	Internet or WiFi	SECURITY ACCESS	PROCESS MANUFACTURI	COMMENTS
						PC																														120	1	4						X						
42	Chemistry		1			John Bonham Agilent 1200					1	16	18	33																																	requires CPU and waste storage under counter
						DEGRASSER																														120	1		30											
						BIN PUMP SL																														120	1		220											
						HIP ALS-SL																														120	1		300											
						TCC																														120	1		320											
						DAD SL																														120	1		160											
						PC																														120	1	4						X						
43	Chemistry		1			GC-01 (Agilent 7890B + 7693)					1	40.5	22	37							x	x	x													yes	208	1	?						x						
																																					120	1	?												
																																					120	1	?												
44					1	New GC (Agilent 7890B + 7693)					1	40.5	22	37							x	x	x													yes									x						Could share CPU with existing GC
46	Chemistry		1			Prep HPLC Agilent 1200					1	30	18	36																															x						requires CPU, has vacuum pump under table 12x31x28
						DEGRASSER																														120	1		30											
						BIN PUMP																														120	1		220											
						ALS																														120	1		300											
						ALS THERM																														120	1		260											
						COLCOMP																														120	1		320											
						DAD																														120	1		160											
						RID																														120	1		160											
						PC																														120	1	4						X						
45	Dungeon		1			Microscope, Olympus CX31					1	11	12	20																								115	1		102					X						Currently sharing with FTIR, but will need own CPU
						Misc. Supplies / Storage																																														
46	Various		2			Flammable Cabinets					2	43.5	19	67																																						Reagent storage
47				3	2	Glass front Cabinet for chemical storage					5	48	22	84																						yes															
						KILO LAB																																													***Some equipment can interchange between storage***
						Casework																			x	x		x		x																			
						Sink (Epoxy) w/ Eyewash																																														
						Fume Hoods																																														
						Spot Exhaust																																														
1						10' Walk - In Fume Hood					2					X	X		X																													X						
						Floor Mounted (Equipment Zone)																																														
2	Cage		1			Spray Dryer w Inert Loop (Buchi B290 & 295)					1	26	26	73					x																				208	1		2900											two pieces, each needs 220V. Can live in equipment storage room
																																					208	1		1400											
3	Cage		1			Huber large chillers, 50 L (x1)					1	17	17	26																								208	1	18.5			X									on a rolling cart
4	Kilo Lab		1			50L Jacketed Pilot Plant React					1	48	30	84																								220		?												In Fume Hood
5						20L reactors (2)					2	31	30	78																								115	1		2000											In Fume Hood, there are 2 same dim each. Can live in equipment storage room
6	Kilo Lab		1			10L reactors					1	24	21	76																								115	1		2000											In Fume Hood, none. Can live in equipment storage room
7	Kilo Lab		1			5L reactor					1	24	21	58																								115	1		2000											In Fume Hood, none. Can live in equipment storage room
8	Kilo Lab		1			20L rotovap chiller (Heidolph)						29	29	39																								208	1		3500											
9	Kilo Lab		1			20L rotovap (Heidolph)						40	29	88			X																							230	1		4600											Equipment made up of 2 pieces: 40x29x88 and 29x29x39
10	Kilo Lab		1			Vacuum Pump for Heidloph Rotovap																																		120	1	4												
11	Kilo		3			Lab Chiller for Reactions					3	15	21	33																								208	1	18.5												
			1			**Bench Top Equipment**																																														
12	Kilo Lab		2			(2) VWR OVEN VAC w/shelf for Kil (2)					2	24	24	27			X		X																				120	1		1700											both ovens are connected to 1 pump
13	Kilo Lab		1			Pump for VWR Oven Vacs					1	16	18	20																								120	1	10												
14	Kilo Lab		1			Toploading Balance x 1 (kilo lab)					1	11	12	11																								115	1		5											In enclosure
15	Cage		1			Neutsch Filter (10L)						21.5	26	63																																						Currently in storage.
16	Cage		1			20 L Flask																																												Currently in storage.
17	Cage		1			20 L Filter stainless steel																																												Currently in storage.
18	Kilo Lab		2			Distillation Cart x 2 (Chemglass)					2																																								
						Misc. Supplies / Storage																																														
				1		Storage Cabinet																																														
						Equipment Room																																														
6				1		Ice Maker					1																																									
1	Storage		1			Lab Chiller (Julabo)					1	24	30	46																								230	1	13												Too big to keep in Kilo Lab when not in use
2	Storage		1			Buchi Pressflow Gas Controller, 6010, (1)					1	10	21	22																								230	1	13												3 pieces, 1st piece
3	Storage		1			Buchi Pressflow Gas Controller, 6010, (2)					1	12	10	7																																					3 pieces, 2 together second dimension

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Equipment ID #	Existing Location @ 99 Hayden	Existing to Relocated from	New	Future	GENERAL DESCRIPTION ROOM AND EQUIPMENT NAMES 65 HAYDEN	EQUIPMENT DETAILS MODEL NUMBER	 SERIAL NUMBER	STATUS SUPPLIED	 INSTALLED	PHYSICAL QUANTITY	 Width	 Depth	 Height	 Image #	PLUMBING / PIPING COMPRESSED	 VACUUM (VAC)	 CARBON	 NITROGEN (N2)	 SPECIALITY	 Zero air	 Hydrogen	 Helium	 PROCESS	 DOMESTIC	 DOMESTIC HOT	 CHILLED/ICED	 PROTECTED	 TEMPERED	 D.I. WATER	 SANITARY	 SPECIAL	HVAC REQUIRETMENTS TEMP. REQMTS (CHILL)	 HUMIDITY REQMT	 CLEAN RM REQMTS	 EXHAUST (CFM)	ELECTRICAL REQUIREMENTS VOLTS	 PHASE	 AMPS	 WATTS (kw)	 STAND BY PWR	 UPS	 CLASS 1, DIV 2	 ALARM POINT	 DATA / WIFI	 TELEPHONE	 Internet or WiFii	 SECURITY ACCESS	PROCESS MANUFACTURI	COMMENTS
4	Storage	1			Buchi hydrogenator					1	26	17	44																																				requires a chiller. Could be used with Julabo
5	Cage	2			Lab Chiller for Reactions					2	15	21	33																																				Not sure if these still work
Analyt 4				2	ES2000 CDM stability chambers (New)					2	41	35	92																X								220	1	30			x						representative model
					Sample storage (Pharm Dev)																																											
			1		Powder Enclosure																																											
	Cage	1			Analytical Balance																																											
					CHEMICAL WASTE STORAGE																																												
					Fume Hoods										x	x		x																														
2					8 ft Walk-In Fume Hood																																												
					Misc. Supplies / Storage																																												
1	Cage	3	1		Flammable Cabinets					4	43.5	19	67																																					
					Solvent storage																																												
					Misc. Supplies / Storage																																												
1	Various	6			Flammable Cabinets					6	43.5	19	67																																					
					BIOANALYTICAL LAB																																												
					Casework																					x	x		x		x																
					Sink (Epoxy) w/ Eyewash																																												
					Benches																																												
					Fume Hoods																																											
1		1			6' Fume Hood					1					x	x		x																														
					Floor Mounted (Equipment Zone)																																												
2	Lab	1			Explosion Proof Under the counter refrigerator					1	23.5	28.5	33.5																									115	1	1.5		X							
3	Lab	1			Under the counter refrigerator					1	24	24.5	34.5																									115	1	1.5		X							
4	Lab	1			Explosion Proof Freezer (-20)					1	32	29	71																									115	1	5		X							This Freezer was originally slated for freezer room
					Bench Top Equipment					1																																						
6	Bioanalytical Lab		1		Sciex API6500/ HTC PAL/ Agilent 1200 -3 modules BUCK BOOST					1	72	30	35.5					x		X																	208 208 120 120 120 120	1 1 1 1 1 1	12 4.5 4.5 4 4	42 30 30 220 220 120 120		X X		X X				Equipment made up of 2 tables: 72x30x35.5 and 56.5x28x64
7	Bioanalytical Lab		1		~~Sciex API6500/ HTC PAL/ Agilent 1200 -3 modules~~ ~~modules?~~						56.5	28	64					x		X																	208 208 120 120 120 120	1 1 1 1 1 1	12 4.5 4.5 4 4	42 30 30 220 220 120 120		X X		X X				Equipment made up of 2 tables: 72x30x35.5 and 56.5x28x64
8	Bioanalytical Lab		1		AB Sciex Qtrap 5500/ Shimadzu UFLC-XR/ Agilent- 5 modules					1	72	30	60					x		X															yes	208 208 120 120 	1 1 1 1 	1 12 30 220 6.3 	42 30 220 400 600 160 		X 		X 				zero air: Equipment made up of 2 tables (72x30x60 and 72x30x72) and 1 fr mounted unit that consist of 2 pieces (40x32x53)

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Equipment ID #	Existing Location @ 99 Hayden	Existing to	Relocated from	New	Future	GENERAL DESCRIPTION ROOM AND EQUIPMENT NAMES 65 HAYDEN	EQUIPMENT DETAILS MODEL NUMBER	 SERIAL NUMBER	STATUS SUPPLIED	 INSTALLED	PHYSICAL QUANTITY	 Width	 Depth	 Height	 Image #	PLUMBING / PIPING COMPRESSED	 VACUUM (VAC)	 CARBON	 NITROGEN (N2)	 SPECIALITY	 Zero air	 Hydrogen	 Helium	 PROCESS	 DOMESTIC	 DOMESTIC HOT	 WATER COLD	 PROTECTED	 TEMPERED	 D.I. WATER	 SANITARY	 SPECIAL	HVAC REQUIREMENTS TEMP REQM'TS (CO2&N2)	 HUMIDITY REQMT	 CLEAN RM REQMTS	 EXHAUST (CFM)	ELECTRICAL REQUIREMENTS VOLTS	 PHASE	 AMPS	 WATTS (kw)	 STAND BY PWR	 UPS	 CLASS 1, DIV 2	 ALARM POINT	 DATA / WIFI	 TELEPHONE	 Internet or WiFii	 SECURITY ACCESS	PROCESS MANUFACTURI	COMMENTS
						PC																																															
9	Bioanalytical Lab		4			~~AB Sciex Ctrap 5500/ Shimadzu UFLC-XR/ Agilent- 5 modules~~						72	32	72					x		X																yes	208	1	1			X		X						zero air: Equipment made up of 2 tables (72x30x60 and 72x30x72) and 1 fr mounted unit that consist of 2 pieces (40x32x53)
																																								208	1	12												
																																								120	1		30											
																																								120	1		220											
																																										6.3												
																																											400												
																																											600												
																																											160												
																																											200												
						PC																																															
10	Bioanalytical Lab		4			~~AB Sciex Ctrap 5500/ Shimadzu UFLC-XR/ Agilent-floor-mounted piece (2 units)~~						40	32	53					x		X																yes	208	1	1			X		X						zero air: Equipment made up of 2 tables (72x30x60 and 72x30x72) and 1 fr mounted unit that consist of 2 pieces (40x32x53)
																																								208	1	12												
																																								120	1		30											
																																								120	1		220											
																																										6.3												
																																											400												
																																											600												
																																											160												
																																											200												
						PC																																															
11					g	Sciex API6500/ HTC PAL/ Agilent 1200 -3 modules					2	180?	42	72					x		X																yes	208					X								zero air, 30 AMP, 230 Volts Maybe needed
12					g	Q Exactive (high mass res)					1	180?	42	72					x		X	X												yes	208					X								zero air, 30 AMP, 230 Volts Maybe needed
13				1		Balance with HEPA enclosure (NEW) existing balance mens/ouse					1	50.25	29.5	60																				yes																
14	Bioanalytical Lab		1			Olis DW2000 Conversion Digital Spectrophotometer					1	48	22	12																						120	1		1000											
						UNIT																														120	1	5												
						PC																														120	1	4												
15	Lab		1			Centrifuge					1	30	27	16																						120	1	12												
16	Lab			1		Biologic Turbo vap 96					1	18	24					X																		120	1	6											Located in fume hood
17	Lab		1			Sonicator					1	17	16	15																				120	1	?	700										Assumed 700W
18	Lab		1			96 Well dryer					1																								120	1	5												
						Misc. Supplies / Storage																																															
						Movable benches																																															
						COMPOUND ROOM																																																
						Casework																																															
						Sink (Epoxy) w/ Eyewash																																															
1	DMPK	x				Flammable Storage Cabinet						43.50	19	67															x	x		x		x																				
						3ft of bench for sample management																																															
						Floor Mounted (Equipment Zone)																																															
2	DMPK		x			Thermo Scientific Pharmacy Fridge-double					1	56.5	35	78																						120	1	10.2			X		X							
3	DMPK		x			Thermo Pharmacy Refrigerator-single					1	28	35	78.5																						120	1	9.4			X		X							
4				x		New-Thermo Pharmacy refrigerator #2 double					1	56.5	35	78																											X		X							
5					x	New-Thermo Pharmacy refrigerator #3 double					1	56.5	35	78																											X		X							
						Bench Top Equipment																																																
6	DMPK			x		Analytical Balance with HEPA enclosur bal table					1	36	36	70																																								
				x		Computer Station next to 3ft of open bench																																															
						Misc. Supplies / Storage																																															
						DMPK/PHARMACOLOGY LAB																																															
						Casework																																															
						Sink (Epoxy) w/ Eyewash																																															
1	DMPK		1			Flammable Storage Cabinet						35	23	35															x	x		x		x																				
	DMPK		1			Lab Gasses nitrogen in hood																																															
						Fume Hoods																																															
						Spot Exhaust																																															
2			1			remain)					1																																										

Concert Pharmaceuticals
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Equipment ID #	Existing Location @ 99 Hayden	Existing to Remain	Relocated from	New	Future	GENERAL DESCRIPTION ROOM AND EQUIPMENT NAMES 65 HAYDEN	EQUIPMENT DETAILS MODEL NUMBER	 SERIAL NUMBER	STATUS SUPPLIED	 INSTALLED	PHYSICAL QUANTITY	 Width	 Depth	 Height	 Image #	PLUMBING / PIPING COMPRESSED	 VACUUM (VAC)	 CARBON	 NITROGEN (N2)	 SPECIALITY	 Zero air	 Hydrogen	 Helium	 PROCESS	 DOMESTIC	 DOMESTIC HOT	 WATER (DI)	 PROTECTED	 TEMPERED	 D.I. WATER	 SANITARY	 SPECIAL	HVAC REQMTS TEMP. REQMTS (DEGS.)	 HUMIDITY REQMT	 CLEAN RM REQMTS	 EXHAUST (CFM)	ELECTRICAL REQUIREMENTS VOLTS	 PHASE	 AMPS	 WATTS (kw)	 STAND BY PWR	 UPS	 CLASS 1, DIV 2	 ALARM POINT	 DATA / WIFI	 TELEPHONE	 Internet or WiFii	 SECURITY ACCESS	PROCESS MANUFACTURI	COMMENTS
3				1		MISQ																																												wall mounted
						Floor Mounted (Equipment Zone)																																													
4	DMPK	1				Refrigerator, under-counter (4 °C) #7 sticker					1	24	24	34																									115	1	3.3		X										
5	DMPK	1				Refrigerator, under-counter (4 °C) #9 sticker					1	23.5	25	33.5																									115	1	5		X										
6	DMPK	1				Refrigerator, under-counter (4 °C) RC Sticker					1	21.5	24	34																									115	1	3.3		X										
7	Culture	1				Refrigerator, under-counter (4 °C)					1	24	24	34																									115	1	3.3		X										
8	DMPK	1				Undercounter freezer (-20 °C) no # label					1	21.5	24	33																									115	1	1	115	X										
9	DMPK	1				Undercounter freezer (-20 °C) No # label					1	21.5	24	34																									115	1	1.1	127	X										
10	DMPK	1				Undercounter freezer (-20 °C) A sticker					1	21.5	24	33.5																									115	1	1	115	X										
11	DMPK				1	Undercounter freezer (-20 °C)					1	21.5	24	33.5																									115	1	1		X										
12				1		Tecan Automation System					1	76	42	75		X		X																																with automation table equipment sits on top of table
13				1		Double wide pharma or deli thermo Refrigerator					1	54	30	78.5																									120		10.2	1224											Note: We want to purchase this new to get one with interior outlets.
						Bench Top Equipment																																													
14	DMPK	1				Balance HEPA Enclosure w marble table					1	31.5	24.5	38.5																									12	1		6											on granite slab slab dims 35x24x31.5
15	DMPK	1				Balance-toploader ~~Enclosure Fl W marble will be inside enclosure~~					1	32.25	24.75	34																									115	1		50											~~sits inside hepa enclosure~~ This does not require an enclosure
16	DMPK	1				Waterbath	30	78.5			1	36.5	14	12																							115	1	12.9											sits on table and has cover that can be removed fits bottles
17	DMPK	1				VWR Incubator					1	30.5	30.5	33.25																							120	1	5.2											sits on table
18	DMPK	1				VARIO Pipetting Platform					1	15	14	17																									115	1		75											sits on table
19	DMPK	1				Mantis Liquid Handling System					1	14	11	8																									115	1		100											sits on table
20	DMPK	1				Softmax Pro plate reader					1	23	16	9																									115	1	3.1											sits on table
21	DMPK	1				Desicator					1	13	16	24.5																							115	1		35											
22	DMPK	1				pH Meter					1	16	16	19																							115	1	?											sits on table
23	DMPK	1				DMPK Lab Centrifuge needs to be on end cap of bench					1	30	27.5	16																									115	1	12											sits on table, has lid that opens
24	DMPK	1				Biotek ELX-405R5 microplate wash					1	30	20	16																									120	1	8											plus 10x10x8 pump
						PUMP																															120	1	5											
						Misc. Supplies / Storage																																												
						Freezer Room																																												
						Floor Mounted (Equipment Zone)																																												
1	Cage/Freezer Rm			1		Thermo-Fisher Freezers -80 (Numbers 1 thru 7)					7	45	39	78																									208	1	9		X		X								largest dimension for -80
2						~~New Freezers -80 (Numbers 7 & 8)~~					2	45	39	78																													X		X								
3	shipping/receiving		1			VWR Cryotank requires a nitrogen tank 28x28x55 next to it					1	28	28	48																													X		X								
4	glassware		1			MRE Cryotank requires a nitrogen tank 28x28x55 next to it					1	32	34	55																													X		X								
5pl	Lab		1			~~Explosion Proof Freezer (-20)~~					1	32	29	71																													X										Freezer has a motor on top, dim to top of motor 75.5
						BL-2 Sample Prep Lab																																												
						Casework																																											
						Floor Mounted (Equipment Zone)																																												
1	e		1			4ft BioSafety Cabinet					1	53.5	30	88																																							
						TISSUE CULTURE ROOM																																												
						Casework																																											
						Sink (Epoxy) w/ Eyewash																							x	x		x		x																		
1			1			Mobile table						48	25	36																																						One of these can be in lieu of built in bench
2			1			Mobile table						72	36	35.5																																					One of these can be in lieu of built in bench
						Floor Mounted (Equipment Zone)																																												
3	Tissue Culture	1	1			6' BioSafety Cabinet (this is from TC Lab in old space)					2	78	30	88		x																							120	1	16											Move existing and purchase new one
4	Culture	1				Thermo CO2 Incubator-stacked					1	26.5	31	33.75			x																					120	1	5.2		X				X					
5	Culture	1				Thermo CO2 Incubator on platform with castors					1	26.5	31	41.25			x																					120	1	5.2		X				X					
6					2	New-Thermo CO2 Incubator					1	26.5	31	41.25			x																																			This will be purchased for new space and stacked

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Equipment ID #	Existing Location @ 99 Hayden	Existing to	Relocated from	Now	Future	GENERAL DESCRIPTION ROOM AND EQUIPMENT NAMES 65 HAYDEN	EQUIPMENT DETAILS MODEL NUMBER	 SERIAL NUMBER	STATUS SUPPLIED	 INSTALLED	PHYSICAL QUANTITY	 Width	 Depth	 Height	 Image #	PLUMBING / PIPING COMPRESSED	 VACUUM (VAC)	 CARBON	 NITROGEN (N2)	 SPECIALITY	 Zero Air	 Hydrogen	 Helium	 PROCESS	 DOMESTIC	 DOMESTIC HOT	 PROTECTED	 TEMPERED	 D.I. WATER	 SANITARY	 SPECIAL	HVAC REQUIRMENTS TEMP REQMTS (CAV/VAV)	 HUMIDITY REQMT	 CLEAN RM REQMTS	 EXHAUST (CFM)	ELECTRICAL REQUIREMENTS VOLTS	 PHASE	 AMPS	 WATTS (kw)	 STAND BY PWR	 UPS	 CLASS I, DIV 2	 ALARM POINT	 DATA / WIFI	 TELEPHONE	 Internet or WiFi	 SECURITY ACCESS	 PROCESS MANUFACTURI	COMMENTS
7				1		Refrigerator undermount-size This will be a full size refrigerator					1	24	25.5	71																																				This will be purchased for new space
						Bench Top Equipment																																													
8	Culture		1			Microscope					1	10	18	20																																				
9	Tissue Culture		1			Microscope cell counter					1	6	8	14																																				Requires space for the computer (laptop) that comes with cell counter
10	Culture		1			Water Bath					1	25	15	15																																		
11	Culture		1			Centrifuge					1	24.5	25	38																																		
12	Culture		1			VWR Incubator					1	22	22	27																																		
13				1		Computer station					1																																						
						Misc. Supplies / Storage																																												
						NMR SUITE																																												
						Floor Mounted (Equipment Zone)																																												
1	NMR		x			Bruker Advance III 400 NMR						72	72	144																																				
2	NMR		x			RF Cabinet						86	30	29																																				
						Bench Top Equipment										X																																		
3						computer station						86	30	29																																				
						GLASSWASH																																											
						Casework																																											
						Sink (Epoxy) w/ Eyewash																						x	x				x																
						Lab Gasses																																												
						Floor Mounted (Equipment Zone)																																												
1	Glasswash		x			Glasswasher there are 2 both diff sizes						32	28	35														x	x		x		fd																
2			x			Glasswasher there are 2 both diff sizes						24	25	34														x	x		x		fd																
3	Glasswash		x			Icemaker					1	24	27	39														x	x		x		fd															
4	Shipping		x			CO2 Manifold						12	8	15																																			wall mounted
5	Chemistry		x			Helium Manifold						15	11	15																																			wall mounted
						Bench Top Equipment																																											
6					x	Autoclave						28	33	21																																			
						Misc. Supplies / Storage																																											
						PHARMA EQUIPMENT ROOM																																											
						Casework																																											
						Bench						91	30	36.25																																			
						Table						72	30	35.5																																		
						Floor Mounted (Equipment Zone)																																												
						Bench Top Equipment																																											
1	DMPK		x			BectonDickinson FACSCalibur Flow Cytometer						36	24.5	27.5																																					sits on bench not table
2	DMPK		x			LiCor Odyssey Infra-red Imaging						22	23	15																																					sits on table not bench
3	DMPK		x			PerkinElmer Enspire 2300, Multi Mode Reader						20	25	32																																				
4	DMPK		x			Biorad QPCR						13.5	20	15																																				located outside of pharma equip room on separate table
5	DMPK		x			Aushon multiplex ELISA plate readed						11	24	12																																				
6					x	New MSD ELISA Plate reader					1	27	31	30																																				could relocate to DMPK/Pharmacol if space needed
7	Culture		1			QiaCube					1	36	24	50																																			could relocate to DMPK/Pharmacol if space needed
						Utilities																																										
						Zero Air Compressor																																											
						High Density Shelving																																											
1	Cage Storage					Floor System		location TBD				200.5	125																																				
2	Cage Storage					Shelf 1		location TBD				204	38	101.5																																				
3	Cage Storage					Shelf 2		location TBD				204	44	101.5																																				
						TBD																																										
4					x	Icemaker		location TBD			1	24	28	39																																				

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Equipment utility columns																														
STATUS		PHYSICAL					PLUMBING / PIPING																	HVAC REQUIREMENTS						
SUPPLIED	INSTALLED	QUANTITY	Width	Depth	Height	Image #	COMPRESSED	VACUUM (VAC)	CARBON	NITROGEN (N2)	SPECIALITY	Zero air	Hydrogen	Helium	PROCESS	DOMESTIC	DOMESTIC HOT	PROTECTED	PROTECTED	TEMPERED	D.I. WATER	SANITARY	SPECIAL	TEMP REQM'TS (Celcius)	HUMIDITY REQMT	CLEAN RM REQMTS	EXHAUST (CFM)			

Equipment ID #	Existing Location @ 99 Hayden	Existing to	Relocated from	New	Future	GENERAL DESCRIPTION ROOM AND EQUIPMENT NAMES 65 HAYDEN	EQUIPMENT DETAILS MODEL NUMBER	SERIAL NUMBER	ELECTRICAL REQUIREMENTS VOLTS	PHASE	AMPS	WATTS (kw)	STAND BY PWR	UPS	CLASS 1, DIV 2	ALARM POINT	DATA / WIFI	TELEPHONE	Internet or WiFii	SECURITY ACCESS	PROCESS MANUFACTURI	COMMENTS
						Server Room																
	Server Room		X			dell server (PowerEdge R430)			120	1		600		X								
	Server Room		X			dell server (PowerEdge R430)			120	1		600		X								
	Server Room		X			hp server (DL380 G8)			120	1		600		X								
	Server Room		X			hp server (DL380 G8)			120	1		600		X								
	Server Room		X			Switch			120	1		100		X								
				X		hp server (Gen10)			120	1		1600		X								
				X		hp server (Gen10)			120	1		1600		X								
	Server Room		X			Barracuda Email 300			120	1	1.2A AC			X								
	Server Room		X			Pure Storage //m10			120	1		625		X								
	Server Room		X			Netapp 2240			120	1		400		X								
	Server Room		X			zyxel XS3700-24			120	1		161 (max		X								
	Server Room		X			zyxel XS3700-24			120	1		161 (max		X								
						MDF																
			X			switch						100		X								
			X			core switch						400		X								
			X			Passive PoE Injector						60		X								
			X			PoE Injector						100		X								
			X			PoE Switch						180		X								
			X			PoE Switch						180		X								
			X			Fortigate 200D						max		X								
			X			Peplink Balance 580						max		X								
			X			arctic wolf appliance						400		X								
			X			data domain DD2200 (7 HDD)				406V A/AC		394		X								
			X			Multitech FaxFinder FF240						13.05 max		X								
						IDF																
			X			switch	100W	UPS				100		X								
			X			Passive PoE Injector	60W	UPS				60		X								
			X			PoE Injector	100W	UPS				100		X								
			X			PoE Switch	180W	UPS				180		X								
						Kitchen																
	Kitchen		X			Beverage Fridge																
	Kitchen		X			General fridge/ freezer																
	kitchen		X			General fridge/ freezer																
	Kitchen		X			Concert-provided food fridge/freezer																
				X		Vending Machine																

EXHIBIT 4-3

LANDLORD/TENANT RESPONSIBILITY MATRIX

Landlord/Tenant Operational Responsibility Matrix			
65 Hayden Ave., Lexington, MA			
	Landlord	**Tenant**	**Notes**
Utilities			
Building Electricity	X		Tenant premises will be separately sub-metered.
Exterior lot lighting	X		
Gas	X		
Water and Sewer	X		
Water and Sewer - Irrigation	X		
Telephone Loading Dock Intercom	X		
Telephone - Elevator/Fire Alarm Panel	X		
Janitorial			
Contract - Common Areas	X		
Contract - Tenant Premises		X	
Supplies/other - Common Areas	X		
Supplies/other - Tenant Premises		X	
Interior Window Washing		X	
Exterior Window Washing	X		
Trash and Recycling (non-hazardous)	X		Landlord will provide a dumpster at the loading dock for tenant's use.
Biohazard Disposal Services		X	
Roads and Grounds			
Landscape Maintenance	X		
Parking Lot Maintenance	X		
Snow removal	X		
Sidewalk/Other	X		
Common Maintenance	X		
Life Safety Systems			
Fire & Sprinkler Annual Testing	X		
Fire Alarm System Maint.	X		
Generator PM - Base Building	X		
TT Supplemental Generators		X	

	Extinguishers - Common Areas		X		
	Extinguishers - Tenant Premises			X	
	Repairs & Maintenance				
	Electrical R&M - Common		X		
	Electrical R&M - Tenant Premises			X	
	Bulbs and Ballast - Common Areas		X		
	Bulbs and Ballast - Tenant Premises			X	
	Elevator Contract and Maint.		X		
	HVAC Repairs/Supplies		X		
	HVAC - Supplemental Units/Supplies			X	
	Plumbing R&M - Common Areas		X		
	Plumbing R&M - Tenant Premises			X	
	Façade Repairs/Structural		X		
	Pest Control - Common Areas		X		
	Pest Control - Tenant Premises			X	
	Roof Repairs		X		
	Door Repair			X	
	Keys and Locks			X	
	Access Control - Base Building		X		
	Access Control - Tenant Premises			X	
	Contract Security Services		X		
	Lab Services				
	RODI Maintenance		X		
	Vacuum System		X		
	Waste PH System			X	
	Compressed Air		X		
	Compressed Gasses			X	

EXHIBIT 5

EXISTING BASE BUILDING SYSTEMS AND CAPACITIES

Tenant Maximum Capacity:

Base Building Generator: 152,660 Watts
Air Flow (CFM): 70,525
Electrical: 457,980 Watts
RODI Water: 18 megohm water with a flow rate of 42 gallons per minute

EXHIBIT 6

FORM OF LETTER OF CREDIT

_____
[Name of Financial Institution]

Irrevocable Standby
Letter of Credit
No. _____
Issuance Date:_____
Expiration Date:_____
Applicant:_____

Beneficiary

[[[LANDLORD NAME]]]

_____
_____

Ladies/Gentlemen:

We hereby establish our Irrevocable Standby Letter of Credit in your favor for the account of the above referenced Applicant in the amount of _____ U.S. Dollars ($_____) available for payment at sight by your draft drawn on us when accompanied by the following documents:

1. An original copy of this Irrevocable Standby Letter of Credit.

2. Beneficiary's dated statement signed by a purportedly authorized officer/official certifying that the Beneficiary is entitled to draw upon this Letter of Credit (in the amount of the draft submitted herewith) pursuant to this Lease (the "**Lease**") dated _____ by and between _____, as Landlord, and _____, as Tenant and/or any amendment to the lease or any other agreement between such parties related to the lease.

It is a condition of this Irrevocable Standby Letter of Credit that it will be considered automatically renewed for a one year period upon the expiration date set forth above and upon each anniversary of such date, unless at least sixty (60) days prior to such expiration date or applicable anniversary thereof, we notify you in writing by certified mail return receipt requested or by recognized overnight courier service, that we elect not to so renew this Irrevocable Standby Letter of Credit. A copy of any such notice shall also be sent, in the same manner, to:

_____. In addition to the foregoing, we understand and agree that you shall be entitled to draw upon this Irrevocable Standby Letter of Credit in accordance with 1 and 2 above in the event that we elect not to renew this Irrevocable Standby Letter of Credit and, in addition, you provide us with a dated statement purportedly signed by an authorized signatory or agent of Beneficiary stating that the Applicant has failed to provide you with an acceptable substitute irrevocable standby letter of credit in accordance with the terms of the above referenced lease. We further acknowledge and agree that: (a) upon receipt of the documentation required herein, we will honor your draws against this Irrevocable Standby Letter of Credit without inquiry into the accuracy of Beneficiary's signed statement and regardless of whether Applicant disputes the content of such statement; (b) this Irrevocable Standby Letter of Credit shall permit partial draws and, in the event you elect to draw upon less than the full stated amount hereof, the stated amount of this Irrevocable Standby Letter of Credit shall be automatically reduced by the amount of such partial draw; and (c) you shall be entitled to transfer your interest in this Irrevocable Standby Letter of Credit from time to time and more than one time without our approval and without charge. In the event of a transfer, we reserve the right to require reasonable evidence of such transfer as a condition to any draw hereunder.

This Irrevocable Standby Letter of Credit is subject to the Uniform Customs and Practice for Documentary Credits (1993 revision) ICC Publication No. 500.

We hereby engage with you to honor drafts and documents drawn under and in compliance with the terms of this Irrevocable Standby Letter of Credit.

All communications to us with respect to this Irrevocable Standby Letter of Credit must be addressed to our office located at _____ to the attention of _____.

Very truly yours,

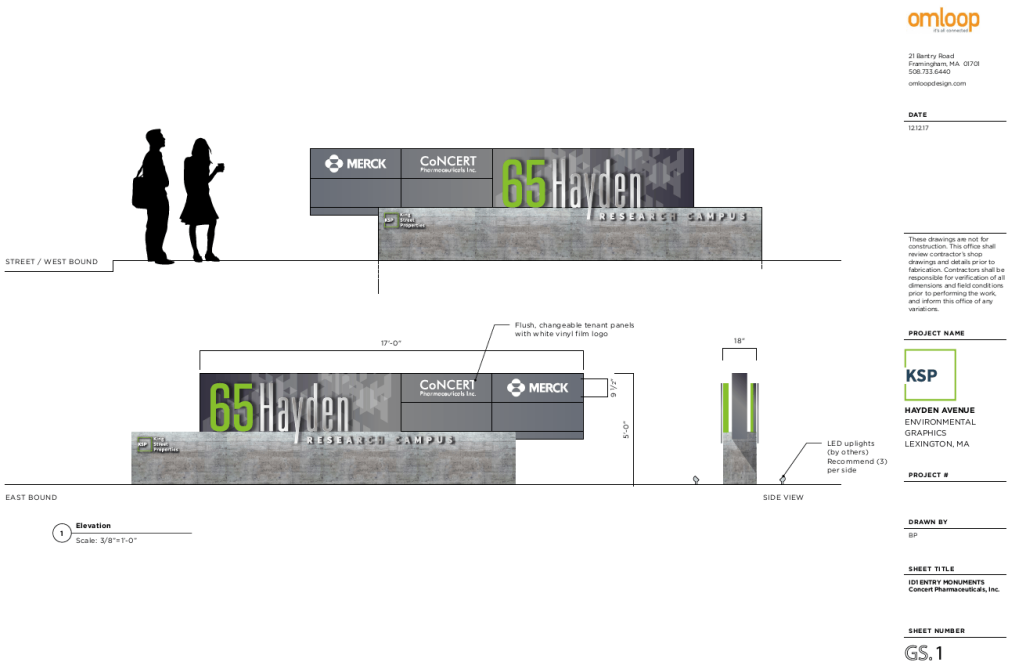
_____

[name]_____

[title]_____

EXHIBIT 6-1

ELEVATION SHOWING LOCATION OF TENANT'S MONUMENT SIGN



omloop
it's all connected

21 Bentry Road
Framingham, MA 01701
508.733.6440
omloopdesign.com

DATE
121217

These drawings are not for construction. This office shall review contractor's shop drawings and details prior to fabrication. Contractors shall be responsible for verification of all dimensions and field conditions prior to performing the work, and inform this office of any variations.

PROJECT NAME
KSP
HAYDEN AVENUE
ENVIRONMENTAL GRAPHICS
LEXINGTON, MA

PROJECT #

DRAWN BY
BP

SHEET TITLE
101 ENTRY MONUMENTS
Concert Pharmaceuticals, Inc.

SHEET NUMBER
GS.1

omloop

21 Bantry Road
Framingham, MA 01701
508.733.6440
omloopdesign.com

DATE
12.12.17

PROJECT NAME

KSP

HAYDEN AVENUE
ENVIRONMENTAL
GRAPHICS
LEXINGTON, MA

PROJECT #

DRAWN BY
BP

SHEET TITLE
ID1 ENTRY MONUMENTS
Concert Pharmaceuticals, Inc.

SHEET NUMBER
GS.2

EXHIBIT 7

LANDLORD'S SERVICES

1. Hot and cold water to the Common Area lavatories and the Premises, including both office and laboratory space

2. Electricity for Building Common Areas and the Premises [Note: Electricity to the Premises shall be submetered.]

3. HVAC services to the Building Common Areas and the Premises, including both office and laboratory space. The maximum air flow capacity available to Tenant is 70,525 CFM

4. Elevator service. The maximum electrical capacity available to Tenant is 457,980 Watts

5. Trash removal

6. Snow removal

7. Exterior grounds and parking maintenance

8. Management services

9. Campus security systems, including (i) security personnel staffing a security station in the lobby of the Building during normal business hours and (ii) security personnel located on the Campus, with periodic patrols, 24 hours per day, 7 days per week.

10. Maintenance of life safety systems (fire alarm and sprinkler)

11. Access to the following shared laboratory systems on a pro-rata basis:

    a) Vacuum

    b) Compressed Air

    c) RO/DI Water: The maximum capacity available to Tenant is 18 megohm water with a flow rate of 42 gallons per minute

12. Such other services as Landlord reasonably determines are necessary or appropriate for the Property.

13. Landlord shall keep the Premises and the Building equipped with appropriate safety appliances to the extent required by applicable laws or insurance requirements, and Landlord shall responsible for the maintenance and repair of the base building life safety systems as set forth on Exhibit 4-3.

EXHIBIT 8

TENANT'S HAZARDOUS MATERIALS

[See attached.]

EXHIBIT 9-1

BUILDING RULES AND REGULATIONS

65 HAYDEN AVENUE, LEXINGTON, MA

A. General

1. Tenant and its employees shall not in any way obstruct the sidewalks, halls, stairways, or exterior vestibules of the Building, and shall use the same only as a means of passage to and from their respective offices. At no time shall Tenants permit its employees, contractors, or other representatives to loiter in Common Areas or elsewhere in and about the Property.

2. Corridor doors, when not in use, shall be kept closed.

3. Areas used in common by tenants shall be subject to such regulations as are posted therein.

4. Any Tenant or vendor sponsored activity or event in the Common Area must be approved and scheduled through Landlord's representative, which approval shall not be unreasonably withheld.

5. No animals, except Seeing Eye dogs, shall be brought into or kept in, on or about the Premises or Common Areas, except as approved by Landlord or stated in the Lease.

6. Alcoholic beverages (without Landlord's prior written consent), illegal drugs or other illegal controlled substances are not permitted in the Common Areas, nor will any person under the influence of the same be permitted in the Common Areas. Landlord reserves the right to exclude or expel from the Building any persons who, in the judgment of the Landlord, is under the influence of alcohol or drugs, or shall do any act in violation of the rules and regulations of the Building.

7. No firearms or other weapons are permitted in the Common Areas.

8. No fighting or "horseplay" will be tolerated at any time in the Common Areas.

9. Tenant shall not cause any unnecessary janitorial labor or services in the Common Areas by reason of Tenant's carelessness or indifference in the preservation of good order and cleanliness.

10. Smoking and discarding of smoking materials by Tenant and/or any Tenant Party is permitted only in exterior locations designated by Landlord. Tenant will instruct and notify its employees and visitors of such policy.

11. Bicycles and other vehicles are not permitted inside or on the walkways outside the Building, except in those areas specifically designated by Landlord for such purposes.

12. Tenant shall not operate or permit to be operated on the Premises any coin or token operated vending machine or similar device (including, without limitation, telephones, lockers, toilets, scales, amusement devices and machines for sale of beverages food, candy, cigarettes or other goods), except for those vending machines or similar devices which are for the sole and exclusive use of tenant's employees and located within the Tenant Premises.

13. Canvassing, soliciting, and peddling in or about the Building is prohibited. Tenant, its employees, agents and contractors shall cooperate with said policy, and Tenant shall cooperate and use best efforts to prevent the same by Tenant's invitees.

14. Fire protection and prevention practices implemented by the Landlord from time to time in the Common Areas, including participation in fire drills, must be observed by Tenant at all times.

15. Except as provided for in the Lease, no signs, advertisements or notices shall be painted or affixed on or to any windows, doors or other parts of the Building that are visible from the exterior of the Building unless approved in writing by the Landlord.

16. The restroom fixtures shall be used only for the purpose for which they were constructed and no rubbish, ashes, or other substances of any kind shall be thrown into them. Tenant will bear the expense of any damage resulting from misuse.

17. Tenant will not interfere with or obstruct any building central HVAC, electrical, or plumbing systems.

18. Tenant shall utilize the pest control service designated by Landlord to control pests in the Premises. Except as included in Landlord's Services, tenants shall bear the cost and expense of such pest control services.

19. Tenant shall not install, operate or maintain in the Premises or in any other area of the Building, any electrical equipment which unless such equipment: (i) either bears the U/L (Underwriters Laboratories) seal of approval or is not objected to by the Building Department of the Town of Lexington, and (ii) would not overload the electrical system or any part thereof beyond its capacity for proper, efficient and safe operation as reasonably determined by Landlord, taking into consideration the overall electrical system and the present and future requirements of the Building.

20. Tenants shall not use more than its proportionate share of telephone lines available to service the Building without Landlord's prior written approval, such approval not to be unreasonably withheld, conditioned or delayed.

21. Tenants shall not perform improvements or alterations within the Building or their Premises, if the work has the potential of disturbing the fireproofing which has been applied on the surfaces of structural steel members, without the prior written consent of Landlord, subject to the provisions of the Lease.

22. Tenant shall manage its waste removal and janitorial program, at its sole cost and expense, keeping any recyclables, garbage, trash, rubbish and refuse in vermin proof containers for Tenants sole use within the Landlord designated area until removed with all work to be performed during non-business hours.

23. Lab operators who travel in the Common Areas of the Building must abide by the one glove rule and remove lab coats where predetermined.

24. Chemical lists and MSDS sheets must be readily available to Landlord. In the event of an emergency, first responders will require this information in order to properly evaluate the situation.

25. Tenant shall provide Landlord, in writing, the names and contact information of two (2) representatives authorized by Tenant to request Landlord services, either billable or non-billable and to act as a liaison for matters related to the Premises.

26. Parking of any trailers, trucks, motor homes, or unregistered vehicles in the parking lots is prohibited.

27. Tenants shall not use more than its proportionate share of base building Central HVAC or electrical capacity, subject to the provisions of the lease.

B. Access & Security

1. Landlord reserves the right to close and keep locked all entrance and exit doors of the Building during the hours Landlord may deem advisable for the adequate protection of the Property. Use of the Building and the leased premises before 8 AM or after 6 PM, or any time during Saturdays, Sundays or legal holidays shall be allowed only to persons with a key/card key to the Building or guests accompanied by such persons. Any persons found in the Building after hours without such keys/card keys are subject to the surveillance of building staff. Tenant shall have the right, subject to Landlord's prior approval of plans and specifications for same, to design a key/card key access system for the Premises that shall be compatible with the card key access system for the Building so that Tenant and its employees only need one key/card key to access the Premises and the Building.

2. Tenant shall not place any additional lock or locks on any exterior door in the Premises or Building or on any door in the Building core within the Premises, including doors providing access to the telephone and electric closets and the slop sink, without Landlord's prior written consent, such consent not to be unreasonably withheld, conditioned, or delayed. A reasonable number of keys to the locks on the doors in the Premises shall be furnished by Landlord to Tenant at the cost of Tenant, and Tenant shall not have any duplicate keys made. All keys shall be returned to landlord at the expiration or earlier termination of this Lease.

3. Landlord may from time to time adopt appropriate systems and procedures for the security or safety of the Building, its occupants, entry and use, or its contents, provided that Tenant shall have access to the Building 24 hours per day, 7 days a week. Tenant, Tenant's

agents, employees, contractors, guests and invitees shall comply with Landlord's reasonable requirements relative thereto. Landlord shall cause the Building lobby security station to be staffed 24 hours per day, 7 days per week. After-hours Building access is also provided by a card reader access system.

4. Tenant acknowledges that Property security problems may occur which may require the employment of extreme security measures in the day-to-day operation of the Common Areas. Accordingly, Tenant agrees to cooperate and cause its employees, contractors, and other representatives to cooperate fully with Landlord in the implementation of any reasonable security procedures concerning the Common Areas.

5. Tenant and its employees, agents, contractors, invitees and licensees are limited to the Premises and the Common Areas. Tenants and its employees, agents, contractors, invitees and licensees may not enter other areas of the Project (other than the Common Areas) except when accompanied by an escort from the Landlord.

C. Shipping/Receiving

1. Dock areas for the Building shall not be used for storage or staging by Tenant except in the Loading Dock Premises as permitted in the Lease.

2. In no case shall any truck or trailer be permitted to remain in a loading dock area for more than 60 minutes, except with prior written notice to Landlord, which notice may be given via email, provided that, in any event Landlord shall have the right, in good faith, to require Tenant to adjust its schedule for the use of the dock areas based upon the needs of the other tenants of the Building and Building operations.

3. There shall not be used in any Common Area, either by Tenant or by delivery personnel or others, in the delivery or receipt of merchandise, any hand trucks, except those equipped with rubber tires and sole guards.

4. Lab operators carrying any lab related materials may only travel within the Premises. At no time should any lab materials travel in the Common Areas, except at the Loading Dock and Freight Elevator.

5. Any dry ice brought into the building must be delivered through the loading dock.

6. All nitrogen tanks must travel through the loading dock and should never be left unattended outside of the Premises.

EXHIBIT 9-2

CONSTRUCTION
RULES AND REGULATIONS

THE RULES MUST BE POSTED AT THE JOB SITE AT ALL TIMES!

1. Access. Building entrances; lobbies, passages, corridors, public elevators, stairways, and other common areas will not be encumbered or obstructed by the contractor, or contractor's agents during construction of the tenant's lease premises. Contractors are not to use the main building entrances, access should be through the loading dock entrance only.
   All work must be scheduled through the Management Office in advance and include a list of contractors performing work.
   Work to be performed after hours must be scheduled through the Management Office 24 Hours before the activity will occur.
   All after hours work must be supervised by the general contractor.
   Each contractor is responsible for their subcontractor(s), and the actions of their personnel including clean-up and construction traffic. Contractors are not to use Tenant phones, or Restrooms under any circumstances. Construction personnel found using phones or restrooms located in the tenant's suite will be asked to leave the premises and not allowed to return.

   Break areas for construction personnel are subject to LPC approval.

   ALL PASSENGER ELEVATORS AND PUBLIC AREAS, INCLUDING THE BUILDING FITNESS CENTER, SHALL BE RESTRICTED AND OFF LIMITS TO ALL CONSTRUCTION PERSONNEL.

2. Cleanliness and Damages. Prior to commencement and upon completion of each job, a walk-through of public areas will be made, i.e. restrooms, freight elevators, loading dock, etc., and any subsequent damages will be the responsibility of the contractor. The contractor shall be responsible for cleaning these areas each day at his own expense. LPC reserves the right to require that General Contractor provide proof of a pest control plan at any time throughout the construction project.

3. Parking. Parking areas are designated by the Management Office and subject to change at any time. Failure to park in a designated area will result in the towing of the vehicle at the owner's expense. The General Contractor is required to designate a single badge holder to stand at the entrance gate each morning to provide access for other contractors parking in the lot.

4. Safety and Protection of Property. Contractors shall police ongoing construction operations and activities at all times, keeping the premises orderly, maintaining cleanliness in and about the premises, and ensuring safety and protection of all areas, including loading docks, elevators, lobbies and all other public areas which are used for access to the premises. Contractor shall provide adequate protection to all carpets, wall surfaces, doors and trim in public areas through which materials are transported. Any damage to existing walls, carpets, doors or trim during construction shall be repaired by the Contractor.

   Construction materials shall only be stored in the premises where they are to be installed. No storage of materials will be permitted in any public areas, loading docks or corridors leading to the premises, nor in any mechanical rooms, electrical rooms, etc. Materials left in unauthorized areas may be disposed of by LPC.

5. Noise and Vapor Restrictions. Work that would cause an inconvenience to the tenant or other tenants in the building, or work to be performed in an occupied space must be performed after hours or on the weekend. Noise generating activities include, but are not limited to floor penetrations created with the use of core drilling machines, pneumatic hammers, attaching wall track etc. These tasks shall be performed before 7:30 a.m. or after 7:00 p.m. Likewise, any construction techniques causing dust, or vapors etc. must be conducted during these hours.

   When construction is on an occupied multi-tenant floor, noise (i.e., radios, loud talking, equipment, etc.) must be kept to a minimum. The Property Manager will have the sole authority to determine if an operation is causing excessive noise, dust, or vapor.
6. Building Standards. Lincoln Property Company has the right to inspect work at any time and may reject work that does not conform to code, tenant's plans, or work that may affect the exterior appearance, structural components, or building system. Mechanical and electrical shop drawings must be reviewed and approved by Landlord's engineer, or representative. All panels and transformers are to match the building standard systems and all materials and methods used to connect panels and transformers must be approved by Landlord.

   a. If project requires modification of existing ductwork, duct should be hard capped. The use of plastic is not acceptable.

7. Fees. Contractor is responsible for all costs incurred by the Landlord in association with the project. This is including but not limited to; fire alarm and sprinkler disconnects, City of Cambridge master box fees, security details, additional required cleaning and trash

removal, and overtime engineering labor costs.

8. Shutdowns and Outages. Unscheduled outages of any utility, or building service is strictly prohibited. Building services include but are not limited to; fire alarm and sprinkler systems, BAS system, air handling, exhaust, etc. Work to any base building system to accommodate work directed by the tenant or unforeseen interference (i.e., sprinkler head conflicts) which is not part of the Work, will be performed by the tenant's contractor at tenant's sole expense.

   All planned utility outages and fire and life safety system impairments must be coordinated in advance with the management office. Utility shutdowns that impact base building and/or other tenant systems must be coordinated at least two weeks in advance. All fire alarm and sprinkler system shutdown requests must be submitted to the management office two full business days in advance of the work with a completed shutdown request form.
9. Dust and Odor Control. Dust and odors are to be controlled with temporary partitions which are sealed adequately to prevent entry outside of the construction area. Common areas must be kept clean at all times and free from hazards. A general clean-up of the space under construction is to be performed on a daily basis. Floor sweep or a comparable material will be used when sweeping concrete or tile floors. Final clean-up will be the responsibility of the contractor, which is to include all vacuuming and dusting as required.

10. Hot Work. At no time is any welding or cutting with a torch to be used in the building without prior approval and coordination from the Management Office.

11. Loading Dock and Freight Use. All material deliveries must be made through the loading dock and transported directly to the job site utilizing the designated freight elevator only. The contractor may not use the passenger elevators for the transportation of materials at any time. All vehicles are to be removed from the dock as soon as the delivery is complete. Unattended vehicles will be towed at the contractor's expense. Extended deliveries of sheetrock, MEP equipment and construction materials must be scheduled with the management office for delivery after normal business hours. The building's freight elevator is available during normal business hours for routine deliveries of one or two trips.
12. Waste Removal. The Contractor is responsible for removing all construction debris and trash from the construction site. Under no circumstances shall trash or construction debris be allowed to accumulate. Dumpster locations are subject to approval by the Management Office. Containers may be delivered and picked up between the hours of 4PM – 10AM. Under no circumstances is the Landlord's dumpster to be used.

13. Punch List. It shall be the responsibility of the general contractor to complete all punch list items before the tenant move-in date or the stipulated completion date.
14. Insurance. Contractors will be required to carry standard requirements incorporating both the owner and LPC Commercial Services, Inc. as additionally insured parties.
15. Posting. A copy of these regulations shall be posted on the job site for all parties to observe. Contractor is responsible for instructing all of his personnel and subcontractors to comply with these regulations.

Lincoln Property Company reserves the right to change or modify these rules and regulations at any time.

Your signature below signifies that you have read the rules above and agree to abide by all of them.

_____

_____

Signature Date:_____ Firm Name:_____

Effective Date:_____

EXHIBIT 10

TENANT WORK INSURANCE REQUIREMENTS

Tenant shall, at its own expense, maintain and keep in force, or cause to be maintained and kept in force by any general contractors, sub-contractors or other third party entities where required by contract, throughout any period of Alterations to the Premises or the Building by Tenant, the following insurance coverages:

(1) Property Insurance. "All-Risk" or "Special" Form property insurance, and/or Builders Risk coverage for major renovation projects, including, without limitation, coverage for fire, earthquake and flood; boiler and machinery (if applicable); sprinkler damage; vandalism; malicious mischief coverage on all equipment, furniture, fixtures, fittings, tenants work, improvements and betterments, business income, extra expense, merchandise, inventory/stock, contents, and personal property located on or in the Premises. Such insurance shall be in an amount equal to the full replacement cost of the aggregate of the foregoing and shall provide coverage comparable to the coverage in the standard ISO "All-Risk" or "Special" form, when such coverage is supplemented with the coverages required above. Property policy shall also include coverage for Plate Glass, where required by written contract.

Builders Risk insurance coverage may be provided by the general contractor on a blanket builders risk policy with limits adequate for the project, and evidencing the additional insureds as required in the Lease.

(2) Liability Insurance. General Liability, Umbrella/Excess Liability, Workers Compensation and Auto Liability coverage as follows:

(a) General Liability	$1,000,000 per occurrence $1,000,000 personal & advertising injury $2,000,000 products/completed operations aggregate

The General Contractor is required to maintain, during the construction period and up to 3 years after project completion, a General Liability insurance policy, covering bodily injury, personal injury, property damage, completed operations, with limits to include a $1,000,000 limit for blanket contractual liability coverage and adding Landlord as additional insured as respects the project during construction and for completed operations up to 3 years after the end of the project. Landlord requires a copy of the ISO 20 10 11 85 Additional Insured endorsement, showing Landlord as an additional insured to the GC's policy.

(b) Auto Liability	$1,000,000 combined single limit (Any Auto) for bodily injury and property damage, hired and non-owned cover.
(c) Workers Compensation	Statutory Limits
Employers Liability	$1,000,000 each accident*

$1,000,000 each employee*
$1,000,000 policy limit*

* or such amounts as are customarily obtained by operators of comparable businesses

General Contractor shall ensure that any and all sub-contractors shall maintain equal limits of coverage for Workers Compensation/EL and collect insurance certificates verifying same.

(d) Umbrella/Excess Liability $5,000,000 per occurrence

(e) Environmental Insurance – To the extent reasonably required by Landlord Contractors' commercial general liability/umbrella insurance policy(ies) shall include Landlord and Landlord's designees as additional insureds', and shall include a primary non-contributory provision. Liability policy shall contain a clause that the insurer may not cancel or materially change coverage without first giving Landlord thirty (30) days prior written notice, except cancellation for non-payment of premium, in which ten (10) days prior written notice shall be required.

(3) Deductibles. If any of the above insurances have deductibles or self-insured retentions, the Tenant and/or contractor (policy Named Insured) shall be responsible for the deductible amount.

All of the insurance policies required in this Exhibit 10 shall be written by insurance companies which are licensed to do business in the State where the property is located, or obtained through a duly authorized surplus lines insurance agent or otherwise in conformity with the laws of such state, with an A.M. Best rating of at least A and a financial size category of not less than VII. Tenant shall provide Landlord with certificates of insurance upon request, prior to commencement of the Tenant/contractor work, or within thirty (30) days of coverage inception and subsequent renewals or rewrites/replacements of any cancelled/non-renewed policies.

EXHIBIT 11

ADDITIONAL PROVISIONS

I. RIGHT OF FIRST OFFER—SECOND FLOOR--SOUTH:

A. Grant of Option. Subject to the provisions of this Section I, Tenant shall have a one-time right of first offer (the "**RFO**") to lease each RFO Premises, as hereinafter defined, or any portion thereof, at the time that as hereinafter set forth, at the time that such RFO Premises, or any portion thereof, becomes available for lease, as hereinafter defined.

B. Definition of RFO Premises. The "**RFO Premises**" consist of: (i) an area ("**Second Floor RFO Premises**") located on the second floor of the South wing of the Building, containing 78,899 rentable square feet, on the second (2nd) floor of the Building, South, as shown on Exhibit 1C, Sheet 1, attached hereto and incorporated herein, (ii) an area ("**Third Floor RFO Premises**") located on the third (3rd) floor of the South wing of the Building, containing 25,730 rentable square feet, as shown on Exhibit 1C, Sheet 2, attached hereto and incorporated herein; and (iii) an area ("**First Floor Hazardous Waste Storage RFO Premises**") located on the first (1st) floor of the Building, containing 446 rentable square feet, as shown on Exhibit 1C, Sheet 3, attached hereto an incorporated herein. The parties hereby acknowledge and agree that:

(i) the Second Floor RFO Premises are currently occupied by Merck Sharp & Dohme Corp. (the "**Merck**"), pursuant to a lease (the "**Merck Lease**"), the term of which expires as of November 27, 2019. The RFO shall not apply to the Second Floor RFO Premises until after the expiration, or prior termination, of the initial lease of the Second Floor RFO Premises, or any portion thereof, by Landlord to a third party ("**Initial Second Floor Tenant**") or other than Merck (or its successor);

(ii) the Third Floor RFO Premises are presently vacant. The parties expressly agree that the RFO shall not apply to the Third Floor RFO Premises, or any portion thereof, until after expiration or prior termination of the initial lease of the Third Floor RFO Premises, or such portion thereof, to a third party ("**Initial Third Floor Tenant**"); and

(iii) the First Floor Hazardous Waste Storage RFO Premises are currently occupied by Merck pursuant to the Merck Lease. The RFO shall not apply to the First Floor Hazardous Waste Storage RFO Premises until after the expiration, or prior termination, of the Merck Lease with the First Floor Hazardous Waste Storage RFO Premises, or any portion thereof, as the Merck Lease with respect to the First Floor Hazardous Waste Storage RFO Premises may be extended or renewed.

The Initial Second Floor Tenant and the Initial Third Floor Tenant is each sometimes referred to herein as "**Initial Tenant**".

C. Available for Lease to Tenant. Each RFO Premises, or any portion thereof, shall be deemed to be "**available for lease to Tenant**", if, in Landlord's bona business judgment: (i) Landlord's lease with respect to either of the RFO Premises, or any portion thereof, will terminate, and (ii) all Superior Rights to such lease such RFO Premises, or such portion thereof, have lapsed unexercised, been irrevocably waived, or will not occur, as the case may be. "**Superior Rights**" shall be defined as: (i) the right of the Initial Tenant of a RFO Premises to extend or renew the term of its lease of such RFO Premises, or the applicable portion thereof, and (ii) Landlord to enter into an agreement with the then holder of Initial Tenant's interest under Landlord's lease of such RFO Premises, or the applicable portion thereof, renewing or extending such lease.

D. Procedures for Exercising RFO. At such time as either RFO Premises, or any portion thereof, becomes available for lease to Tenant, Landlord shall, subject to the provisions of this Section I, give a written offer (the "**Offer**") to Tenant of the terms under which Landlord is prepared to lease the RFO Premises to Tenant, including the Base Rent (which shall be based upon Landlord's good faith judgment of the fair market rental value of the RFO Premises in question, Tenant's improvement allowance, if any, renewal term and all other terms. Tenant may lease the RFO Premises under such terms, by delivering written notice (the "**Acceptance**") to Landlord accepting such Offer within ten (10) business days after Landlord gives such Offer to Tenant. If Tenant disputes the Base Rent set forth in the Offer, Tenant shall have the right, in its Acceptance, to submit such dispute to appraisal (Tenant hereby confirming and agreeing that Tenant shall be unconditionally bound by the result of such appraisal). In such event, the Base Rent applicable to such RFO Premises shall be determined in accordance with the same procedure set forth in Section 1.2(c) of the Lease of the Lease, except that: (i) the Acceptance shall be deemed to be "Tenant's Response Notice" and the Base Rent applicable to such RFO Premises shall be deemed to be the "**Extension Term Base Rent**".

E. Conditions to RFO. The RFO is subject to the following conditions, and, without limiting the foregoing, Landlord shall have no obligation to give an Offer to Tenant with respect to either RFO Premises, or any portion thereof, if any of the following conditions ("**Conditions**") are not satisfied:

(i) an Event of Default by Tenant (as said term is defined in Section 20 of the Lease) exists at the time that Landlord would otherwise deliver the Offer; or

(ii) no more than twenty-five (25%) percent of the Premises is sublet (other than to an Affiliated Entity or Successor, as defined in Section 13.7 of the Lease) at the time Landlord would otherwise deliver the Offer; or

(iii) the Lease has been assigned (other than to an Affiliated Entity or Successor) prior to the date Landlord would otherwise deliver the Offer; or

(iv) Tenant is not occupying more than seventy-five (75%) percent of the Premises on the date Landlord would otherwise deliver the Offer; or

(v) less than three (3) years remain in the Term; provided, however, that if, at the time that Landlord would otherwise be required to give an Offer to Tenant, Tenant has a right, pursuant to Section 1.2 of the Lease, to extend the Term of the Lease which has not been waived or lapsed unexercised, then Landlord shall nevertheless give the Offer and Tenant may elect to exercise the RFO Premises provided that, simultaneously with giving the Notice of Exercise, Tenant gives Landlord an Extension Notice under Section 1.2 of this Lease).

F. Termination of Right of First Offer. Tenant's right to Lease either RFO Premises, or any portion of either RFO Premises, as the case may be, pursuant to this Section I shall terminate, and Tenant shall have no further right to lease such RFO Premises, or such portion thereof, upon the earlier to occur of: (i) Tenant's failure to give a timely Acceptance within the ten-(10)-business-day period provided in Section D above; or (ii) the date Landlord would have provided Tenant an Offer if Tenant had not failed to satisfy one or more of the Conditions set forth in Section E above.

G. Terms of Lease Applicable RFO Premises. The terms applicable to Tenant's demise of either RFO Premises, or any portion thereof, shall be upon the terms set forth in the applicable Offer, and otherwise upon the terms and conditions of the Lease, to the extent that the provisions of the Lease are not inconsistent with such Offer, and as follows:

(i) The term for such RFO Premises, or portion thereof, shall, subject to clause (iii) below, commence upon the commencement date stated in the Offer and expire on the Expiration Date of the Lease (as it may be extended pursuant to Section 1.2 above).

(ii) Tenant shall pay Base Rent and Additional Rent for such RFO Premises, or portion thereof, in accordance with the terms and conditions of the Offer, unless Tenant, in its Acceptance, submits its dispute as to Base Rent for such RFO Premises to appraisal, in which event such Base Rent shall be determined by appraisal, as set forth above.

(iii) The First Floor Hazardous Waste Storage RFO Premises may only be used for the purposes which Tenant is permitted to use the Hazardous Waste Storage Premises.

(iv) Such RFO Premises, or portion thereof, shall be accepted by Tenant in its condition (including improvements and personalty, if any) and as-built configuration existing on the earlier of the date Tenant takes possession of such RFO Premises, of portion thereof, or as of the date the term for such RFO Premises, or portion thereof, commences, and Landlord shall have no obligation to provide any Landlord Contribution or free rent with respect to such RFO Premises, or portion thereof, unless otherwise provided in such Offer. Without limiting the foregoing, Landlord shall have no obligation to construct any improvements or provide any allowance to Tenant in order to use the First Floor Hazardous Waste Storage RFO Premises for its Permitted Use.

H. Offering Amendment. If Tenant exercises the RFO with respect to either RFO Premises, or any portion thereof, Landlord shall prepare an amendment (the "**Offering Amendment**") adding such RFO Premises, or portion thereof, to the Premises on the terms set forth in the Offer and reflecting the changes in the Base Rent, Rentable Square Footage of the Premises, Parking Spaces, and other mutually agreeable appropriate terms. A copy of the Offering Amendment shall be sent to Tenant within a reasonable time after Landlord's receipt of the Acceptance sent by Tenant to Landlord, and, if the terms and conditions of the Offering Amendment are reasonably acceptable to Tenant, then Tenant shall execute and return the Offering Amendment to Landlord within fifteen (15) days thereafter, but an otherwise valid exercise of the RFO shall be fully effective whether or not the Offering Amendment is executed.

I. If Tenant does not give Landlord a written Acceptance on or before the date ("**Last Acceptance Date**") which is ten (10) business days after Landlord gives the Offer to Tenant, Landlord shall have the right to enter into a lease the subject RFO Premises on any terms to any party within 365 days after the earlier of: (i) the date that Tenant gives Landlord written notice declining to accept the Offer, or (ii) the Last Acceptance Date, failing which, Landlord shall be again obligated to deliver an Offer to Tenant in accordance with the provisions of this Section I before leasing the subject RFO Premises to a third party.

II. EMERGENCY GENERATORS

A. Existing Generator. Reference is made to the fact the Building is served by a 400 kw 480/277 3 phase 4 wire ("**Existing Generator Capacity**") emergency generator (the "**Existing Generator**"). Tenant shall have the right, subject to obtaining Landlord's prior written approval, which approval shall not be unreasonably withheld, to connect its equipment in the Premises to the Existing Generator, provided that the aggregate electrical demand of all equipment connected by Tenant to the Existing Generator at any time shall not exceed 152,660 watts. Landlord's sole obligation to Tenant with respect to the Existing Generator shall be to contract with a reputable third party ("**Generator Servicer**") to maintain the Existing Generator as per the manufacturer's standard maintenance guidelines. Landlord shall have no obligation to supervise, oversee or confirm that the Generator Servicer is maintaining the Existing Generator per the manufacturer's standard guidelines or otherwise, and Landlord shall have no obligation or liability to Tenant in the event that the Existing Generator is not operational.

B. **Tenant's Generator**. In addition to, Tenant's right to connect its equipment to the Existing Generator, as set forth above, Tenant shall have the right, at Tenant's election to demise the Generator Area, as hereinafter defined, if Tenant, in its sole discretion, determines that either: (i) the Generator Servicer is failing to maintain the Existing Generator in operable condition, or (ii) the Existing Generator is insufficient to provide enough power to the Premises to service Tenant's needs. In either such event, Landlord shall demise and lease the Generator Area, as hereinafter defined, to Tenant, and Tenant shall hire and take the Generator Area from Landlord. The "**Generator Area**" shall be defined as an area outside of the Building, which shall be mutually agreed upon by Landlord and Tenant. Tenant shall have the right to use the Generator Area solely for the purpose of installing a concrete pad and for the installation and use of Tenant's own emergency generator ("**Tenant's Generator**") in accordance with the provisions of this Section B. The term of the Lease with respect to the Generator Area shall commence as of the date that Tenant first commences work installing said concrete pad ("**Commencement Date in respect of Tenant's Generator**") and shall terminate as of the Expiration Date of the Lease, as such date may be extended pursuant to Section 1.2 of this Lease (Tenant's Generator and the Generator Area are deemed to be the "**Generator Premises**"). Said demise of Tenant's Generator Area shall be upon all of the same terms and conditions of the Lease, except as set forth herein. Tenant shall not install or operate Tenant's Generator until Tenant has obtained and submitted to Landlord copies of all required governmental permits, licenses, and authorizations necessary for the installation and operation of Tenant's Generator. In addition, Tenant shall comply with all reasonable construction rules and regulations promulgated by Landlord in the maintenance and operation of Tenant's Generator. Tenant shall be permitted to use Tenant's Generator Area solely for the maintenance and operation of Tenant's Generator, and Tenant's Generator and Generator Area are solely for the benefit of Tenant. All electricity generated by Tenant's Generator may only be consumed by Tenant in the Premises.

(i) Tenant shall, at Tenant's cost, landscape or screen, as directed by Landlord, the area around Tenant's Generator Area.

(ii) Tenant shall have no obligation to pay Base Rent, costs and expenses of the Common Areas, or Taxes in respect

of Tenant's Generator Area.

(iii) Landlord shall have no obligation to provide any services including, without limitation, electric current, to Tenant's Generator Area; provided, however, that Tenant, at Tenant's sole cost, shall, subject to the provisions of this Lease (including, without limitation, Section 11 hereof) shall have the right to install wiring in locations designated by Landlord in order to connect Tenant's Generator to Tenant's electrical system serving the Prime Premises.

(iv) Tenant shall have no right to make any changes, alterations, additions, decorations or other improvements (collectively "**Installations**") to Tenant's Generator Area without Landlord's prior written consent, which consent Landlord may withhold in its sole but bona fide business judgment.

(v) Tenant may remove Tenant's Generator and any Installations at any time during the Term of the Lease upon prior written notice to Landlord, provided that Tenant restores Tenant's Generator Area to the same condition as the area surrounding Tenant's Generator at the time of such removal.

(vi) Tenant shall be responsible for the cost of repairing any damage to the Building caused by the installation of Tenant's Generator and/or any Installations.

(vii) Tenant shall have no right to sublet Tenant's Generator Area or to assign its interest hereunder, other than to an Affiliated Entity or Successor as defined in Section 13.7 of this Lease.

(viii) To the maximum extent permitted by law, Tenant's Generator and all Installations in Tenant's Generator Area shall be at the sole risk of Tenant, and Landlord shall have no liability to Tenant in the event that Tenant's Generator or any Installations are damaged for any reason, except to the extent caused by the negligent acts, negligent omissions or willful misconduct of Landlord or any Landlord Parties.

(ix) Tenant shall take Tenant's Generator Area "as-is" in the condition in which Tenant's Generator Area is in as of the Commencement Date in respect of Tenant's Generator, without any obligation on the part of Landlord to prepare or construct Tenant's Generator Area for Tenant's use or occupancy. Without limiting the foregoing, Landlord makes no warranties or representations to Tenant as to the suitability of Tenant's Generator Area for the installation and operation of Tenant's Generator. Notwithstanding the foregoing, at Tenant's written election, Tenant may include the installation of Tenant's Generator on Tenant's Generator Area as part of Landlord's Work, in which event, the costs incurred by Landlord in installing so installing Tenant's Generator shall be included as part of the Cost of Landlord's Work.

(x) In addition to and without limiting Tenant's obligations under the Lease, Tenant shall comply with all applicable environmental and fire prevention laws, ordinances and regulations in Tenant's use of Tenant's Generator Area.

(xi) In addition to and without limiting Tenant's obligations under the Lease, Tenant covenants and agrees that Tenant's use of Tenant's Generator and Installations shall not adversely affect the insurance coverage for the Building. If for any reason, the installation or use of Tenant's Generator and/or the Installations shall result in an increase in the amount of the premiums for such coverage, then Tenant shall be liable for the full amount of any such increase.

(xii) Tenant shall, at Tenant's sole cost and expense, repair and maintain Tenant's Generator and Installations.

(xiii) In addition to and without limiting the insurance provisions of the Lease, Tenant shall procure, keep in force and pay for Commercial General Liability Insurance in respect of Tenant's Generator Area of not less than One Million ($1,000,000.00) Dollars in the event of personal injury to any number of persons or damage to property, arising out of any one occurrence and such insurance shall name Landlord as an additional insured party. Tenant shall have the right to maintain the aforesaid insurance under umbrella coverages.

(xiv) In addition to and without limiting the indemnification provisions set forth in the Lease, Tenant shall, to the maximum extent permitted by law and subject to Section 14.5, indemnify, defend, and hold Landlord harmless from any and all claims, losses, demands, actions, or causes of actions suffered by any person, firm, corporation, or other entity arising from Tenant's use of Tenant's Generator Area, except to the extent caused by the negligent acts, negligent omissions or willful misconduct of Landlord or any Landlord Parties.

PLAN SHOWING LOADING DOCKS/RECEIVING AREA/FREIGHT ELEVATORS/NON-HM STORAGE PREMISES

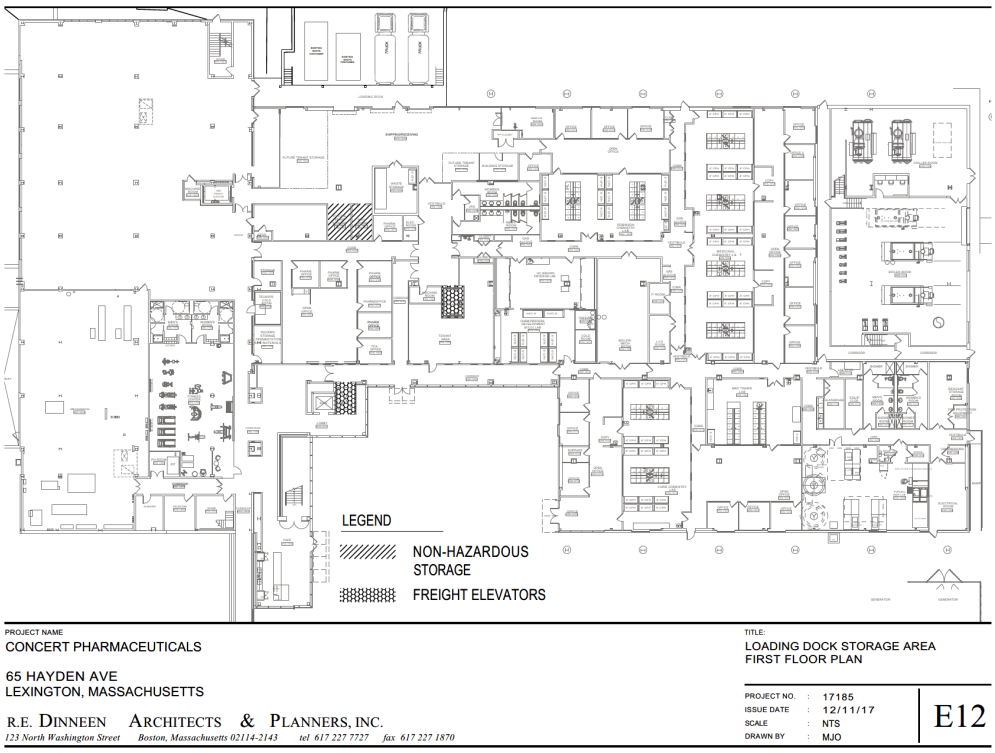


EXHIBIT 13

LIST OF REQUIRED REMOVABLES

EXHIBIT 14-1

MASTER DEED OF THE HAYDEN SCIENCE CENTER CONDOMINIUM

See The Hayden Science Center Condominium, which was established by Master Deed dated December 1, 2017, recorded in Book 70325, Page 108, in the Middlesex South District Registry of Deeds and filed as Document No. 195793 in the Middlesex South Registry District of the Land Court.

EXHIBIT 14-2

DECLARATION OF TRUST
OF THE HAYDEN SCIENCE CENTER CONDOMINIUM

See the Declaration of Trust of The Hayden Science Center Condominium Trust dated December 1, 2017, recorded in Book 70325, Page 148, in the Middlesex South District Registry of Deeds and filed as Document No. 195794 in the Middlesex South Registry District of the Land Court.

EXHIBIT 14-3

THE HAYDEN SCIENCE CENTER CONDOMINIUM PLANS

See the Condominium Floor Plans and Site Plans dated December 1, 2017, and filed with the Middlesex Registry of Deeds,

Southern District, as Plan No. 1090, Pages 1 through 13.

Exhibit 10.22

Summary of Director Compensation Program

The board of directors (the "Board") of Concert Pharmaceuticals, Inc. (the "Company") has approved the following director compensation program. Under this director compensation program, the Company will pay its non-employee directors retainers in cash. Each non-employee director will receive a cash retainer for service on the Board and for service on each committee of which the director is a member. The chairmen of the Board and of each committee will receive higher retainers for such service. These fees are payable quarterly in arrears. The fees paid to non-employee directors for service on the Board and for service on each committee of the Board of which the director is a member are as follows:

	Member Annual Fee	Chairman Annual Fee
Board of Directors	40,000	65,000
Audit Committee	7,500	15,000
Compensation Committee	5,000	10,000
Nominating and Corporate Governance Committee	3,000	7,000

The Company will also reimburse its non-employee directors for reasonable travel and out-of-pocket expenses incurred in connection with attending Board and committee meetings.

In addition, under the Company's director compensation program, each non-employee director elected to the Board after the closing of the Company's initial public offering will receive an option to purchase 25,000 shares of the Company's common stock. Each of these options will vest in equal quarterly installments over a three-year period measured from the date of grant, subject to the director's continued service as a director, and will become exercisable in full upon a change in control of the Company. Further, on the date of the first Board meeting held after each annual meeting of stockholders, each non-employee director that has served on the Board for at least six months will receive an option to purchase 10,000 shares of the Company's common stock. Each of these options will vest in equal quarterly installments over a one-year period measured from the date of grant, subject to the director's continued service as a director, and will become exercisable in full upon a change in control of the Company. The exercise price of these options will equal the fair market value of the Company's common stock on the date of grant.

Exhibit 21.1

Subsidiaries of the Registrant

Name	Jurisdiction of Organization
Concert Pharmaceuticals Securities Corporation	Massachusetts
Concert Pharma U.K. Ltd	United Kingdom

Exhibit 23.1

Consent of Independent Registered Public Accounting Firm

We consent to the incorporation by reference in the Registration Statement (Form S-3 No. 333-202451) of Concert Pharmaceuticals, Inc. and the related Prospectus, the Registration Statement (Form S-8 No. 333-195125) pertaining to the Amended and Restated 2006 Stock Option and Grant Plan and 2014 Stock Incentive Plan of Concert Pharmaceuticals, Inc., the Registration Statement (Form S-8 No. 333-202453) pertaining to the 2014 Stock Incentive Plan of Concert Pharmaceuticals, Inc., the Registration Statement (Form S-8 No. 333-209841) pertaining to the 2014 Stock Incentive Plan of Concert Pharmaceuticals, Inc., and the Registration Statement (Form S-8 No. 333-216459) pertaining to the 2014 Stock Incentive Plan of Concert Pharmaceuticals, Inc., of our report dated March 1, 2018, with respect to the consolidated financial statements of Concert Pharmaceuticals, Inc. included in this Annual Report (Form 10-K) for the year ended December 31, 2017.

/s/ Ernst & Young LLP

Boston, Massachusetts
March 1, 2018

Exhibit 31.1

CERTIFICATION PURSUANT TO RULE 13a-14(a)
OF THE SECURITIES EXCHANGE ACT OF 1934, AS ADOPTED PURSUANT TO
SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, Roger D. Tung, certify that:

1. I have reviewed this Annual Report on Form 10-K of Concert Pharmaceuticals, Inc.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

(a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

(b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

(c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

(d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

(a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

(b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: March 1, 2018

/s/ Roger D. Tung

Roger D. Tung
President and Chief Executive Officer

Exhibit 31.2

CERTIFICATION PURSUANT TO RULE 13a-14(a)
OF THE SECURITIES EXCHANGE ACT OF 1934, AS ADOPTED PURSUANT TO
SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, Marc Becker, certify that:

1. I have reviewed this Annual Report on Form 10-K of Concert Pharmaceuticals, Inc.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

(a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

(b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

(c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

(d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

(a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

(b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: March 1, 2018

/s/ Marc Becker

Marc Becker
Chief Financial Officer

Exhibit 32.1

CERTIFICATION PURSUANT TO 18 U.S.C. SECTION 1350,
AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

In connection with the Annual Report on Form 10-K of Concert Pharmaceuticals, Inc. (the "Company") for the year ended December 31, 2017 as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I, Roger D. Tung, President and Chief Executive Officer of the Company, hereby certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that, to my knowledge:

(1) The Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and

(2) The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Dated: March 1, 2018

/s/ Roger D. Tung
Roger D. Tung
President and Chief Executive Officer

A signed original of this written statement required by Section 906 has been provided to Concert Pharmaceuticals, Inc. and will be retained by Concert Pharmaceuticals, Inc. and furnished to the Securities and Exchange Commission or its staff upon request.

Exhibit 32.2

CERTIFICATION PURSUANT TO 18 U.S.C. SECTION 1350,
AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

In connection with the Annual Report on Form 10-K of Concert Pharmaceuticals, Inc. (the "Company") for the year ended December 31, 2017 as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I, Marc Becker, Chief Financial Officer of the Company, hereby certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that, to my knowledge:

(1) The Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and

(2) The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Dated: March 1, 2018

/s/ Marc Becker
Marc Becker
Chief Financial Officer

A signed original of this written statement required by Section 906 has been provided to Concert Pharmaceuticals, Inc. and will be retained by Concert Pharmaceuticals, Inc. and furnished to the Securities and Exchange Commission or its staff upon request.